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ORIGINAL ARTICLES.

A PROTEST AGAINST RADIOLOGIC MISINFORMATION.

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OF NEW YORK.

IT is unfortunate that whenever a new therapeutic agency is discovered there appears to be a desire on the part of some to exploit it to the fullest extent; to employ it, with or without any decent excuse therefor; and very often when better methods of treatment for a long time had been at the command of the profession. Not content with this they rush into print with eulogistic accounts of their early experiences, hoping thereby to obtain credit for priority in the use of the new and wonderful means they have at *their* command for the cure of almost everything from baldness to corns.

That some of these articles are dictated by vanity is extremely probable; that others are potboilers pure and simple is undoubted; while still others give one the impression of being deliberate and intentional fakes.

I believe, however, that the articles as above characterized are in the minority and that the vast majority are written in perfect good faith and with the sole desire to instruct the profession by accurately reporting the actual experience of their authors.

Such contributions would be of the greatest value to the profession were it not for the fact that the results obtained were often not due to the agencies the author claimed to employ, but rather to forms of energy that he had entirely overlooked.

No one, I believe, will question the statement that articles of this character, however well-intentioned, are an injury to science and to the profession by giving a false impression as to the therapeutic value of the agencies said to have been employed, and overlooking the value of those that were the real active forces that were under command at the time. It is not alone in the periodicals that one finds these faults but also in books that are offered for the instruction of the profession; the authors often indulging in the most misleading and sometimes ridiculous statements. It is my intention to point out a few of these, as I think it time that some very prevalent errors should be corrected.

In a recent work devoted to Static Electricity and other topics I find the following:

"In a dark room polarity" (of a static machine) "may be determined by looking at the plates. Only a few stars are found on the metal comb on the positive side, while a heavy *ultraviolet* stream will be *seen* on the negative side" (italics my own). I need hardly state that the ultraviolet rays are invisible to the ordinary eye.

In another work on static electricity the author speaks of my "hyperstatic" as an up-step transformer which is correct; but immediately afterward calls it *hypostatic* and very curiously in the diagram that accompanies the description shows it as a *down-step* transformer which is incorrect.

A little more than a year ago, an article appeared in one of the metropolitan medical weeklies entitled "The Ordinary X-ray and Ultraviolet Rays in the Treatment of Tuberculosis." From this I quote but a single sentence, as follows:

"In my practice I have used the double focus high vacuum tube, and the ultraviolet . . . tube. I am now using chiefly this ultraviolet tube which is a new method of developing the ultraviolet rays by means of electricity. This tube is an ordinary Crookes' tube, from which the gases have been exhausted in a certain way, and the metal disks so arranged that an ultraviolet, instead of a green-yellow ray is produced. The advantage of this ray over that possessed by the Finsen lamp ray is its greater penetrating power, simplicity and ease of operation."

I am perfectly familiar with the tube the gentleman refers to, and as a matter of fact the tube actually used by him is in my possession at the present time. It is in no sense a "Crookes'" tube, being a low-vacuum tube of the old Geissler type except that it is globular instead of being cylindrical in form.

The original form of Crookes' tube with which Roentgen made his famous discovery was pear-shaped with a plane cathode disk at the smaller end, and the positive electrode inserted at one side. When connected to a proper high tension source, the cathode rays impinged on the basal end of the tube, causing fluorescence and the development of X-rays. A year later (1896) Mr. Jackson brought out his focus-tube in England[1] and all tubes now in use for X-ray work employ this form of construction. The tube used by the writer of the paragraph, when properly actuated, will become more or less filled with a colored luminosity that by courtesy may be termed violet. There are doubtless invisible ultraviolet radiations in association with the colored rays, but the glass walls of the tube constitute a very serious obstacle to their exit. For ultraviolet therapy, therefore, such a tube is comparatively worthless. The writer further confuses the luminosity *within* his tube with the greenish fluorescence due to the impact of the cathode rays on *the walls* of the tube. Finally he commits an error in stating that ultra-

[1] The earliest description that I find of this tube is contained in the Archives of Skiagraphy, June, 1896.

violet rays are more penetrating than the rays from a Finsen lamp. The penetrability of spectrum rays varies directly with their wave-length; *those of the visible spectrum penetrating much more deeply than the short waves of the ultraviolet.*

Another writer recommends the use of ultraviolet rays in neuritis, pulmonary disorders, pleuritic pains and some other affections and says: "I believe that the ultraviolet rays will be of benefit in gonorrheal and tuberculous infections of the joints; also that the pains accompanying locomotor ataxia may be relieved and controlled." In the arrangement employed by this gentleman he obtained luminous and infra-red rays in large volume and great intensity, but the amount of ultraviolet was exceedingly slight, in fact, negligible from a therapeutic standpoint. I do not question the writer's sincerity nor the clinical results reported by him. He was simply deceived as to the agencies that brought them about.

Still another writer, referring to a vacuum tube connected to one pole of an X-ray coil, says: "When in operation this tube is filled with ten thousand waves a minute of ultraviolet and violet light passing into the tissues and disappearing." When we know that the violet and ultraviolet waves succeed each other at the rate of many billions per second the writer's claim of ten thousand a minute is indeed very moderate. They certainly do disappear in the tissues, and it is doubtful if the ultraviolet rays, of which very few would be available, can penetrate even through the entire thickness of the skin.

Still another writer publishes an article entitled "Locomotor Ataxia Successfully Treated with Ultraviolet Rays." This puts a pretty heavy strain on my credulity.

That the very superficially acting ultraviolet rays should penetrate the skin, the fascia, the protecting cartilaginous and bony walls of the vertebral canal and influence the tissues of the spinal cord is to me utterly unbelievable.

It is well known that certain substances if exposed to the ultraviolet, X-rays and radium in a darkened room, will respond by the development of a luminosity and of a color quite different from that which they ordinarily possess. To this condition the name fluorescence has been applied.

A given substance, however, may not respond equally to all three of the agencies above named; and there are many which respond to the ultraviolet, that fail to do so when exposed to X-rays or radium. I do not at the moment recall any reverse instance that is responsive to X-rays or radium and non-responsive to ultraviolet. Some substances, *e.g.*, certain calcites, respond differently to different parts of the ultraviolet region.

Some of the fluorescing substances appear to exhibit marked preferences in their behavior in presence of the different types of radiation—thus platino-cyanide of barium shines brightest in the presence of X-rays; zinc sulphide with radium and willemite (impure silicate of zinc) and certain calcites are most brilliant in the presence of extreme ultraviolet rays.

The usual explanation of fluorescence is that the short wave-lengths of ultraviolet on striking a suitably responsive body are reflected from it with lengthened waves, thus enabling our organ of vision to take cognizance of them. However plausible this explanation may be as regards the ultraviolet it fails to explain the fluorescent phenomena connected with X-ray and radium.

When the luminosity persists after the withdrawal of the exciting cause, the term phosphorescence is applied.[1]

During the past two years some very interesting experiments have been made, chiefly in Europe, with fluorescent coal-tar colors, especially with eosin and erythrosin. Living infusoria were impregnated with these colors and were found not to be much disturbed by them. If, however, they were exposed to the ultraviolet rays, they perished in a fraction of the time required to destroy those that had not been dosed with eosin.

It was but a step from these experiments to an actual trial of the effects of these colors in pathological conditions. When superficial lesions were first painted with fluorescing dyes and then subjected to the ultraviolet rays their action was found to be greatly intensified.

In this country experiments have been along somewhat different lines. One gentleman states that he administers fluorescent solutions internally to patients prior to the use of X-rays or radium and that the combination results in bathing the tissues with fluorescent light; and that this practice is advantageous as regards therapeutic results. I must confess most serious doubts as to the validity of both of these propositions. That fluorescent light is developed in the tissues under given conditions, even if a fact, would be exceedingly difficult to demonstrate and it certainly has not as yet been demonstrated by physical means. As a hypothesis, however, it may be acceptable to those who are prepared to concede or confirm the therapeutic results claimed by the author. In his clinical reports, however, I notice that in some instances he uses in connection with X-rays and with radium, solutions which though brilliantly fluorescent with ultraviolet rays, fail to respond to either X-rays or radium. If X-rays and radium will not produce fluorescence in these solutions outside the body I fail to understand how they can cause them to fluoresce when inside the body.

Turning from journal articles to books, I find that in one published within a year, a woodcut underneath which is an inscription reading: "Patient holding Piffard lamp (condenser interposed between coil and patient)." The cut shows the patient holding the lamp, but there is no condenser in evidence, and if there were, its position should not be between the coil and the patient,

[1] Some English writers give the name phosphorescence to the first luminosity and the name "after-glow" to our phosphorescence.

but between the terminals of the secondary winding of the coil.

In another work, published within a year, I find a number of statements with which I cannot agree, viz., "Matter is composed of particles or atoms or molecules of infinite size." . . . "Starting at the lower end of the spectrum where the waves are infinitely long," etc.

The waves at the lower (red) end of the visible spectrum have a length of about 1/35,000 of an inch. There are, to be sure, waves of greater length in the lower portion of the infra-red, but none that I know of to which the term "infinite" could with propriety be applied.

"In the sensitiveness of the electroscope to radiations of many kinds radio-active substances were discovered." It was by the aid of photography that radio-active phenomena were discovered by Becquerel in 1896. The electroscope came into play at a later date as a means for detecting radio-activity.

"The intensity of a sound is greater as the amplitude of the vibration of each particle of the air is greater, and the intensity of the light is greater as the amplitude of the vibrations of the air is greater." This will certainly be news to such physicists as teach that light undulations are phenomena pertaining not to the *air*, but to the all-pervading *ether*.

Referring to radium this writer says: "The alpha group consists of emanations," etc.

Prof. Rutherford while studying thorium discovered that it emitted a gaseous exhalation and to this gave the name of "emanation." Later it was discovered that a similar "emanation" proceeded from radium, which emanation is entirely distinct from the alpha radiation.

Referring to the actinometer this author says: "The principle of the actinometer involves the play of the rays of light upon a platino-cyanide of barium screen, and then determining the thickness of a solution of *ammoniated sulphate of copper* necessary to *cut off* the chemical frequencies" (Italics mine).

The context fails to throw any light on this curious sentence. The copper solution referred to is employed to "cut off" the non-actinic rays while it affords free passage to the actinic ones.

The paragraphs here quoted are but samples of some of the current literature connected with the subject of physical therapeutics, and I cannot but feel that they tend to retard rather than advance this branch in the confidence and estimation of the profession.

American Gastro-Enterological Association—At the eighth annual meeting of the American Gastro-Enterological Association, held at the Academy of Medicine, New York City, April 24 and 25, 1905, the following officers were elected for the ensuing year: President, Dr. H. W. Bettmann, of Cincinnati; First Vice-President, Dr. S. W. Lambert, of New York City; Second Vice-President, Dr. John P. Sawyer, of Cleveland; Secretary and Treasurer, Dr. Charles D. Aaron, of Detroit.

INTRAMUSCULAR INJECTIONS OF INSOLUBLE PREPARATIONS OF MERCURY IN SYPHILIS.[1]

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It is over forty years since Scarenzio, of Pavia, recommended and employed hypodermic injections of calomel in the treatment of syphilis. For a long time he found but few followers outside of Italy, but since, in 1882 and 1883, Smirnoff and others reported good results obtained by modifications of Scarenzio's method, the interest of the profession was more generally aroused, not only in Europe but also in this country.

Since then many experiments with various salts of mercury and various vehicles have been made and an immense literature on the subject has accumulated principally in Austria, Germany, the Scandinavian countries, Russia, France and Italy. In these early stages the results were not always satisfactory, particularly in regard to abscesses. But the technic of the injections has gradually been improved; oil and the liquid variations of vaselin (albolene, benzoinol, etc.) have taken the place of glycerin or water alone or water mixed with glycerin or mucilage.

From the large number of mercurial combinations recommended by different authors, with few exceptions the choice has narrowed down to three; the metallic mercury in the shape of the gray oil and similar preparations, the neutral salicylate of mercury and calomel; the yellow oxide, which at one time had become quite popular, is hardly mentioned any longer. So we find at the present time the treatment of syphilis by injection of insoluble preparations quite common on the European continent, and adopted as the most favored application of mercury by numerous physicians of repute, particularly by friends of the intermittent treatment of Fournier, Neisser and others, largely supplanting soluble injections and inunctions. It is true, that a number of prominent syphilologists are still opposed to the method, or at least loath to recommend its regular use, although admitting its efficiency and, under certain circumstances, its advantages. Some, however, to a great extent have receded from their former adverse position, as for instance Kaposi (Path. und Therap. der Syphilis, 1891).

We find entirely different conditions in this country. This seems strange enough in the face of the fact that so many American physicians complete their studies at European seats of learning, and that we are so often reminded that with the growing intercourse between all civilized nations medicine has ceased to be local or national and has become a cosmopolitan unit. Up to within the last few years our periodical literature contained but few articles on insoluble injections and by no means all favorable ones; some treated promiscuously the soluble and insoluble injections, so that their conclusions often were

[1] Read before the New York Academy of Medicine, January 19, 1905.

uncertain. Quite recently, however, discussions of the question have taken place in medical societies in New York. Among the more recent hand- and text-books, which more than incidentally treat of syphilis some are entirely reticent of injections of insoluble salts, recognizing only internal treatment and inunctions, so Greene, in Bangs-Hardaway, and Lydston, in his recently published book (1904). Taylor, in the latest edition of 1904, after extensively and favorably commenting on injections of the bichloride says only: "Calomel and other insoluble salts of mercury have been used hypodermically, but their use is attended by many dangers, local and constitutional. Calomel injections will sometimes produce excellent results, but such can also be obtained from the use of bichloride injection and by inunctions. Calomel and other insoluble preparations of mercury, when injected under the skin may produce intractable salivation, severe enteritis and colitis, intestinal ulceration, infarction of the lungs and parenchymatous nephritis and anuria." Only Keyes and Chetwood (1900) have come out squarely in favor of the salicylate. More than usual attention has been given to the question by White and Martin, of Philadelphia, by the former in an extensive article published in the *University Medical Magazine,* May and June, 1893, which includes the opinions of members of the American Association of Genito-Urinary Surgeons, and in general condemns the practice of insoluble injection. This article appeared without any material change in Morrow's System (1893), also in White and Martin's book (1897) and without substantial change by Martin in the latest edition of Hare's therapeutics. Hyde and Montgomery (1900) endorse in principle the position of White and Martin, so that this may be considered as the predominating one in this country, as the one to be contended with in taking up the cause of the insoluble injections.

Under these circumstances it seems but natural, that the method so far has not become popular. A large proportion of the profession is held in ignorance of the progress made by the method or remains under the influence of a strong and widely spread adverse opinion or direct opposition, often founded more on theoretical reasoning than on practical experience. Therefore physicians, who are convinced of the advantage of insoluble injections and wish to employ them in their practice will feel reluctant to do so, because they would be exposed to the risk of being criticized by other physicians, in good or bad faith, for employing an unusual and not sufficiently authorized treatment, or of being held responsible or even accused of malpractice, with at least a semblance of justice, in case of some of the not always avoidable milder or more severe accidents. Consequently some physicians against their better conviction will not use the injection and thereby patients are deprived of the benefits of the method. Nevertheless, insoluble injection have of late been more and more employed in this city in private as well as in public practice. Therefore it seemed desirable and justified to open the question of the propriety of using insoluble injections before the medical profession of this country, and to do so before a body sufficiently prominent to command more general attention. In this sense I have asked for the privilege of reading this paper before you. Within the limited time allowed for the same I shall have to restrict myself to a general report of my experience with insoluble injections since 1886 and to a consideration of the criticism of the method as found in American literature, principally in the writings of Dr. J. W. White, of Philadelphia, as mentioned before.

Claims made by some enthusiasts, that insoluble injections were likely to effect an entire and permanent cure of syphilis in the shortest time and with the minimum amount of mercury I wish emphatically to repudiate. But I believe and expect to prove that in the insoluble injections we possess one of the most effective methods of bringing the organism infected with syphilis under the influence of mercury, a method however, destined to supplement rather than to exclude the other older methods. Therefore I have been using and expect to use in the future ingestion by the mouth, inunctions, soluble injections, baths, fumigations as well as the iodides and even sarsaparilla besides the insoluble injections according to the conditions of the patients and often depending on external circumstances. If it has been objected that there was no demand for further methods of treatment, the older ones being sufficient for all purposes, I reply, that we cannot have too many ways and means for the treatment of such on insiduous and protean disease as syphilis, the last disease in which a treatment by routine ought to be adopted.

Personally I was prompted to try insoluble injections solely by the demands and exigencies of my daily practice. Contrary to the opinion often pronounced in former times, that syphilis was generally of a much milder character in this country than elsewhere, I soon found myself confronted with rebellious cases in which the usual administration of mercury by the mouth was of no avail. Naturally turning to the old established inunctions, I soon found that but a small portion of my clientele were able to apply this method under conditions which would warrant a satisfactory result. It would be folly to deny the efficacy of inunctions if made according to the rules given principally by Sigmund, of Vienna, who practically saved the method from the disrepute in which it had fallen through long-continued abuse. In private practice the uncleanliness, the inability of employing a competent person to do the rubbing, the unavoidable exposure for men living in boarding houses or with their families proved the

principal obstacles. In hospital practice it was the tendency to salivation, ever and ever recurring in spite of all precautions which caused frequent interruptions and thereby undue prolongation of the period of treatment. I then resorted to the soluble injections mostly of the bichloride and the bicyanide, the latter being much less painful and more effective in later manifestations of the disease. The results as a rule were satisfactory enough, but in private practice the necessity of frequent, almost daily repetition of the operation for months, with the incidental expense of money and time, proved an objectionable feature. The pain extending over several hours following the injection and the soreness of the back in the recumbent position at night gave rise to complaints from the hospital patients, among whom stomatitis was by no means of rare occurrence. So when the insoluble injections were introduced into practice, allowing of longer intervals and a smaller number, and promising more energetic and more lasting efforts, I did not long hesitate to give them a trial.

A few applications made in my service in the German Hospital gave me an opportunity of carefully observing the local and general consequences of the injections before I began their use in my office. In my dispensary practice I have used them only exceptionally, principally because I have always been convinced that it requires more educated and intelligent patients to appreciate the advantage of the treatment and to be willing to bear and condone the incidental inconveniences. In the hospital practice I have introduced insoluble injections as one of the regular methods only after several years of experience in private practice. The results were excellent and the patients neither objected nor complained. However, my experience has primarily been gained in private practice with a better opportunity not only for watching the immediate effects but also for continuing the observation of the patients long after the cessation of treatment. At the meeting of the American Dermatological Association in 1889, I presented a report[1] on my experiences with injections of calomel, the yellow oxide and a few of the salicylate to the number of 210 made on 23 patients. The remarks made in the discussion by some of the members were not very encouraging, still I had become sufficiently convinced of the value of the method to continue its practice. Up to the end of 1904 I have records of 2,500 injections made on 204 patients, all male but six; 2,112 of the salicylate, 150 of the yellow oxide, all from the early period, 216 of calomel, partly from the beginning of my experience, partly from the last few years, and three of gray oil. I have included 19 injections of a five per cent. solution of the bichloride, as recommended by Lukasiewitz as a substitute for the insoluble injection. More severe local symptoms and the greater tendency to salivation caused their early discontinuance. I must omit all remarks on the technic of the injections owing to the limited time allowed for this paper, also the details of many interesting cases. In the paper read before the American Dermatological Association, mentioned before, the syringe and the injection itself are minutely described, and I should have to add but very little to what I have said there. The age of the patients ranged between eighteen and sixty years. There were three below twenty years; 89 between twenty and thirty years; 78 between thirty and forty years; 24 between forty and fifty years; 10 between fifty and sixty years.

The number of injections varied from 1 to 42, sometimes distributed over three and four years. Of those who received but one injection I shall speak later on. The number of injections given in the single cases were:

1 injection in 21 cases.
2 injections in 10 cases.
3 and 4 injections in 18 cases.
5 to 10 injections in 66 cases.
11 to 15 injections in 27 cases.
16 to 20 injections in 21 cases.
21 to 25 injections in 16 cases.
26 to 30 injections in 9 cases.
31 to 35 injections in 7 cases.
36 to 42 injections in 9 cases.

or altogether these received:

49 less than 5 injections.
66 from 6 to 10 injections.
48 from 11 to 20 injections.
41 from 20 to 42 injections.

The usual dose was the entire contents of a syringe measuring exactly one cubic centimeter; representing 10 centigrams (one grain and a half) of the salt suspended in oil or liquid vaselin. If the patient had not been taking mercury before, usually only half a syringe was given at the first injection, but even later on the quantity was occasionally reduced to three-quarters or half a syringe. The injections were given at intervals of one week, whenever symptoms of syphilis were present, up to their disappearance; hereafter two to four injections were added at intervals of ten to fourteen days. Ordinarily not more than ten injections were given continuously except when the intervals had been longer. Such a series was followed by an intermission of several months without any treatment, so that patients who were more or less exclusively treated by injections received four to six series from of from six to eight injections up to about the end of the second year; under normal or ordinary conditions this was considered sufficient treatment. I may briefly point to the small amount of mercury involved in such a treatment. As the salicylate represents 59 per cent. of mercury, 10 injections of 10 centigrams within ten weeks are equal to 59 centigrams, that is approximately 10 grains of mer-

[1] Journal of Cutaneous and Genito-Urinary Diseases, VIII, February to April, 1890.

cury, equal to the maximal dose of 10 blue pills; the highest number of injections received by one patient, 42, represent not quite 2½ grams or 40 grains of mercury. A number of patients who had been treated by salicylate injections in Germany and the Scandinavian countries were glad to have the same treatment continued after their arrival in America.

In a number of cases injections were not resorted to until the end of the first or second year after the infection, when either more severe symptoms appeared during internal treatment or milder symptoms on the skin or mucous membranes incessantly recurred. So-called normal or regular cases during the first two years are hardly available for any definite judgment of the value of a treatment, because it is a well-known fact that a similar course of the disease may be observed with every method, and even occasionally without any treatment at all. The abnormal, unusual and precocious malignant cases offer a better field for the critical test of a particular treatment. It would have been interesting to report more fully cases of iritis, early paresis of the eye muscles including pupillary disturbances, affection of the optic nerve, etc. Among the malignant cases were several of precocious ulcerating syphilides, one in a woman; some were promptly healed, in others at least temporarily satisfactory results were obtained; some, however, showed that intractability and obstinate resistance against mercury and often even iodine in any form—peculiar to such cases. In quite a number of the cases heretofore referred to, other methods of mercurial treatment were freely alternated with the insoluble injections, including iodides, according to the condition of the patients and often depending on external circumstances like opportunities for going to some watering place here or in Europe. I do not consider it judicious to continue insoluble injections whenever after three or four no impression on the manifestations of the disease has become apparent, no more than I have been able to convince myself that beyond a certain limit an increase of the dose or number of inunctions will prove effective. An intermission of several weeks or months, with iodides or quinine and other tonics, will render the patient better prepared for the renewal of mercurial treatment. Nor can I agree with Dr. Sinclair who has recently recommended the continuous administration of salicylate injections. In 129 of my patients the injections were made in the first two years after infection, in 15 in the third year, 18 in the fourth and fifth years, 22 between five and ten years, 11 between ten and fifteen years, four between twenty and thirty years, in 9 cases the term of infection could not be ascertained, therefore in 64 cases they were made after the third year. The manifestations which were the objects of treatment in these cases were periostitis, 3; gummata of extensor muscles of thigh, 1; gumma of scalp, 1; of lip, 2; lip and tongue, 4; gummatous processes of nose and palate, 6; in diffuse superficial ulcers of pharynx and palate, 3; tubercular syphilide, 13; gummatous ulcers of leg, 6, and of other regions, 4; gumma of the testicle, 2; cerebral syphilis, 4. All these lesions are usually classed as tertiary and generally considered amenable to treatment by iodine alone or in combination with mercury. Some of these patients were given iodine with the insoluble injections, but within the last years, since I have become more and more assured of the powerful influence of the insoluble injections, I have more frequently discarded iodine treatment and have trusted to the influence of the mercury alone. Quite a number of patients, principally those affected with tubercular syphilides had been treated with iodine or mixed treatment for years; always the most obvious features of the lesions would promptly disappear only to reappear or become recrudescent after a short interval, but they were finally and permanently cured by injections. Gummatous affections of the bones and muscles, which were ever and ever recurring for twelve years were finally cured by insoluble injections in a case which has been fully described by me as a case of reinfection of syphilis in a paper published in the July issue of the *Journal of Cutaneous Diseases* for 1904. From my limited experience with cerebral lues I am inclined to consider it a very favorable field for insoluble injections, particularly of calomel. In these as in others of such late manifestations I have often been surprised or almost puzzled by the prompt, really marvellous improvement after the first insoluble injection. In fact, for years I have not been able to convince myself, that the so-called tertiary lesions of syphilis were less amenable to mercury than the earlier ones and had to be treated principally with iodides. White has questioned the reported benefits in all forms of tertiary syphilis, he says (Morrow II, page 769): "It is contrary to the accumulated experience of the profession to find in late syphilis gummata, periosteal nodes, osteitis, tubercular syphilides, and other phenomena of similar character yielding promptly to the use of mercury alone. It is of undoubted value then as an adjuvant to or in conjunction with the iodides, but on both theoretical and clinical grounds cannot be expected to supersede them." However, he mentions as possibly correct the claim of Jullien that one calomel injection will be sufficient clearly to define the diagnosis of syphilis within eight days, in cases where an early differentiation between syphilis and malignant or tuberculous processes is desired. From my experience I cannot help believing that the want of success in the mercurial treatment of those late forms has been due to the insufficiency of the means employed; I can only advise those who doubt the effectiveness of the insoluble injections to try them without prejudice in suitable cases.

Besides the intended and welcome therapeutic

effects of the insoluble injections there occur to a certain extent some less desirable by-effects, which furnish the principal basis for the objections which have been made against their use. White states, that "locally there is almost always pain of greater or less severity, sometimes subsiding soon after, but oftener increasing or lasting for hours or even days. There is almost always an inflammatory reaction, which, when slightly developed, causes merely a flush around the needle puncture, and a feeling of heat or itching." I find no pain resulting from the injection itself if properly made nor any flush around the needle puncture nor inflammation of the skin. The deposit of the insoluble substance acts as a foreign body and naturally is somewhat painful on pressure, the more so the nearer it is located to some nerve or blood vessel. In such instances more or less severe pain may be felt extending along the extremity, usually not lasting over several hours. A number of patients have experienced absolutely no inconvenience, some have been out riding on horseback or on the bicycle without trouble on the very afternoon after the injection had been made in the forenoon—by the way, not a commendable practice.

These effects depend on the anatomy of the gluteal region, on the development of the subcutaneous fat and the muscles, which furnish a natural protection against pressure. Patients with flat nates, flabby muscles and skin, for that reason a majority of elderly or poorly nourished younger people, are not favorable objects for the injections. "Oftener," continues White, "there is an exudation of lymph with the formation of a hard, horny nodule, moderately tender to the touch and very painful if subjected to continuous pressure. It is usually absorbed if asepsis has been good, it rarely or never disappears under two weeks, often persists for a longer time." The formation of a hard nodule is entirely absent in a great number of cases, almost regularly after the salicylate and frequently after calomel, but a diffuse resistance can be felt at the seat of the injection, sometimes, however, at some distance below the point of puncture. There is some inconvenience in putting on the shoes and stockings; in patients who have a sitting occupation, the lower portions of the nates near the tubera ischii have to be avoided, and some occupations which require continuous going up and down stairs, etc., are not favorable to injections. Often it is impossible after a week to find the seat of the last injection. In a number of cases, particularly after calomel, more or less hard nodules are indeed formed, but they rarely cause much trouble after three or four days and gradually disappear entirely, and in general, after some time no traces even of numerous injections can be found by any outward examination, nor have I ever heard of lasting functional disturbances. White further says: "In a certain proportion of cases the nodule goes on to softening, to suppuration and the formation of an abscess; its disintegration is sometimes attended with extensive sloughing and cellulitis." In one of my cases two patches of superficial gangrene of the skin were observed, the immediate cause of which was not very clear. I have published the history in the *Archiv f. Dermatologie*, in 1903 (V. LXIV, 265). Abscesses, which according to White occur in a certain proportion of cases, I have seen three times within the first three months of my injection practice, one was absorbed without breaking, the other two did not cause any acute inflammation. Since then I have but once seen an abscess after calomel. It was probably due to the faulty preparation of the suspension which was immediately thrown away. This makes four abscesses among 2,500 injections, that is less than one-sixth per cent. In a few cases, one of them a physician, salicylate injections were followed by a diffuse swelling with redness and heat, almost resembling erysipelas, but under treatment with ice and ichthyol they disappeared without any suppuration. In my experience soluble injections have caused considerably more pain, swelling and infiltrations; and others have also seen abscesses. Circumscribed gangrene of the cutis, healing very slowly, is not a rare accident with the bichloride if the injection is made into the cutis itself.

Constitutionally, insoluble injections in large number, probably a considerable majority of the cases, give rise to a slight malaise, moderate headache, reduction of appetite, disinclination to smoking, a certain lassitude, sometimes accompanied by fever, coming on during the first twelve to twenty-four hours and passing off within thirty-six hours. Stomatitis, according to White not infrequent, sometimes of a grave variety—I state this deliberately—is practically totally absent after injections of the salicylate; after calomel it sometimes appears in a mild degree but much less often than after bichloride injections. Still once after calomel and once after the salicylate I have observed the fulminating type of salivation probably due to the complication of infectious tonsillitis. These cases I have fully described in the Festschrift for Prof. Pick in 1898 (*Arch. of Derm.*, XLIII, 407), together with a similar one occurring during inunctions; in all three cases injections and inunction were later continued without further trouble. As in all kinds of mercurial treatment enteritis and colitis have occurred after insoluble injections, but altogether in a comparatively small number of cases; more often, to my surprise, in recent years, usually after the first injection, in some instances gradually showing less intensity, in others returning only in intervals; the symptoms: frequent evacuations, sometimes bloody with tenesmus were never really grave and usually ceased after twenty-four hours. One patient finally received a series of calomel injections without any disturbance of the

bowels. The last danger mentioned by White are two cases of pneumonia reported by myself, presumably due to oil embolism. This is not strictly correct, since I stated (*Journ. Cut. Dis.*, VIII, 1890, 135) that one of the patients presented the symptoms of pneumonia, although no physical signs of infiltration of the lung could be detected. They were undoubtedly cases of embolism into the lungs similar to a number of others since published in literature. These embolisms I have observed altogether 12 times, twice in women; eight occurred up to the end of 1897 out of 1,072 injections, they were published in the previously mentioned Festschrift; since then among 1,428 injections I have seen them only four times. They are probably the most disagreeable incidents of the insoluble injections and so far no absolutely safe way has been found to avoid them, but all authors agree that they are not so dangerous as has been stated, patients usually recovering in three to four days without any further trouble, The absence of almost every sensation at the seat of the injection and an unusual efficacy as shown by the diminution of the specific symptoms somewhat compensate for the disagreeable features. Alarming spells of fainting, as mentioned by Lewin, after bichloride injection due to injections in a vein, I have never seen with the insoluble preparations.

Besides the dangers mentioned by White, parenchymatous nephritis and anuria are ascribed to the insoluble injections by Taylor (Third Edit., 1904, p. 963). Although I have carefully watched the urine during the administration of the injections, I have never seen them followed by albuminuria or other symptoms of parenchymatous nephritis or anuria; albumin occurred in one patient, but finally I found that it was due to long rides on the bicycle and was appearing under this condition even when no injections were given. One patient who for years had had a slight albuminuria received six salicylate injections without any increase of the albumin; two cases of diabetes were not in any way affected by the salicylate. It is a fact that several deaths among thousands of insoluble injections have been reported in Europe; in some the abuse of the method was rather the cause than the method itself. Death has also been reported from inunctions, but such exceptional accidents can hardly be considered as absolutely forbidding a certain treatment, any more than operations are condemned on account of a moderate percentage of fatal consequences. It cannot be denied, that an accumulation of mercury may take place, if for some reason the injected drug remains inert at the seat of the injection, so that under a change of circumstances larger quantities may suddenly be absorbed into circulation. Indeed it has been claimed as a superiority of the insoluble injections over the soluble ones, that the elimination of the mercury is slower and that it continues over a longer period after the cessation of the treatment. But this has also been demonstrated to a certain extent of inunctions. As it has been shown before the actual quantity of mercury ingested by insoluble injections is rather insignificant and therefore the danger is not so great as has been claimed. Nevertheless a careful observation of the patient and particularly watching the functions of the kidneys is necessary. Fortunately the method itself furnishes the opportunity for such observation. When manifestations of syphilis are present, the improvement following the injections usually is the best proof of the assimilation of the mercury; in the absence of notable changes the possibility of non-absorption has to be considered and the injections ought not to be continued indefinitely.

Having given due prominence to the objectionable features I shall point out only the advantages accruing to the patient besides the direct therapeutical effects: His stomach and mouth are not exposed to the influences of the mercury, he is able to attend to his business without interruption, to avoid detection, uncleanliness; and frequent visits to the physician, and enjoys long intervals free of treatment. To an intelligent and sufficiently educated patient you can explain these advantages together with the disadvantages and in the majority of instances he will not object to the treatment. I cannot agree with the statement of White that "the objection of the patients themselves would in this country prove a serious obstacle to the practical success of the method. Even our hospital and dispensary cases constitute a much more independent class than the same sort of people abroad and cannot be subjected to wholesale experimentation with the same impunity. In private practice here it is certainly difficult of adoption, and while it might be attended by the rapid disappearance of symptoms, there would often be an equally rapid disappearance of patients." The very fact that I was able to continue this treatment for nearly twenty years and to give large numbers of injections to single patients proves that it is not so difficult to adopt it in private practice. Among my patients 85 were born in America, 29 of strictly American descent; they were the last to complain and to object, but rather declared, that if they needed more treatment, they would always prefer the injections; the other 56 were of German or Hebrew descent. Neither the native born nor the 119 foreign born, mostly Germans (Swedes, Danes, with a sprinkling of French, English, Irish, Italian, etc.), belonged to the lower classes of our population, mostly to the middle classes; as the following table shows:

Agents, pawnbrokers etc.	8
Artists, architects, engineers and draughtsmen, stenographers	9
Bakers, butchers, pastry cooks, etc.	8
Bankers, business men, merchants and manufacturers	52

Barbers	5
Barkeepers, cigarmakers, restaurant and saloonkeepers	11
Bricklayers, carpenters, painters, sailors	4
Chemists, dentists, druggists, physicians	8
Customhouse, police, postoffice, teachers	4
Clerks	50
Diplomatic service	2
Furriers	3
Journalists, publishers	3
Lawyers	6
Lithographers and printers	3
Machinists	4
Musicians	7
Waiters	8
Women	6
Unknown	3
Total	204

I do not believe that I have lost any great number of patients worth keeping by the use of the injections, certainly not as long as I kept to the principle not to begin them until I was somewhat acquainted with the patient and had been assured of his confidence. Among the 21 patients, who received only one injection, all but ten continued under my observation. With one exception these ten had been strangers to me and I felt tempted to depart from my principle by the urgency of the symptoms or by other circumstances, but even in those ten cases I have no proof that the injection was the cause of their disappearance. On the other hand, I can affirm that among the other patients, particularly among those who received a larger number of injections, there were found the most devoted, conscientious and grateful patients; many of them continue their relations with me many years after the cessation of treatment. I have no doubt, that even in the public service, if properly approached, patients will object very little to the insoluble injections, particularly if it becomes known that the treatment is more commonly used in private practice and not reserved for those who are compelled to seek advise and treatment in public institutions.

42 East Twenty-second Street.

A CASE OF SYPHILITIC PSEUDOPARALYSIS.[1]

BY JACOB SOBEL, M.D.,
OF NEW YORK.

THE osseous changes common to hereditary syphilis are most frequently manifested in the form of a diaphyso-epiphyseal lesion, that is, an osteochondritis of the femur, humerus, tibia, radius or ulna. This manifestation, when associated with other signs of congenital lues admits, as a rule, of a ready diagnosis, but when present as an initial symptom, so to say, it renders a diagnosis not only very difficult, but at times impossible, for some period. The following is a case in point:

[1] Presented at the Pediatric Section, Academy of Medicine, February 16, 1905.

Case.—Helen Z., aged three weeks, bottle-fed since birth, was brought to my dispensary service at Lebanon Hospital on December 1, 1904, with a history that for the past four days the child does not seem able to move its left arm. The child was apparently well until four days ago, when some friends who were visiting the house played with it and pulled the arm, as the guardian thought. The patient was the first-born. The labor was normal and in-so-far as the guardian knew, the parents were healthy. At the first visit both my associate and myself paid particular attention to the examination of the left upper extremity, examining carefully the clavicle, shoulder, elbow, wrist and hand; we found no subluxation, no fracture, no dislocation, no swelling of any kind. There was, however, a drop-wrist with its characteristic deformity and disability. Ticking of the palm caused slight movement of the fingers. No callus pressing on the musculospinal nerve could be detected, nor was there pain on pressure over any of the joints. In addition to the drop-wrist there was a slight inward rotation of the arm suggesting the upper arm type of birth paralysis, but the fact that the condition had appeared during the third week of life, and that there was no atrophy, ruled out Erb's paralysis.

A physical examination of the patient at this time was absolutely negative, not even a palpable liver or spleen. A tentative diagnosis of traumatic neuritis was then made, and gentle massage with cocoa butter and rest were ordered. The guardian returned on two subsequent visits, two and three days apart, to report some improvement; on both of the latter visits, examination of the extremity and especially of the wrist-joint revealed nothing except some slight pain on passive movement. All other joints were free and painless and the gums were normal. There were no evidences of rickets. On December 10 there was detected a distinct crepitation at the lower end of the radius and ulna, at the junction of the epiphysis and diaphysis—an epiphyseal separation; the case was then transferred to the surgical service. One week later the face was partially covered with a papulopustular eruption, with adherent crusts here and there, especially around the mouth; the crusts resembled those of impetigo contagiosa but were easily differentiated by their situation upon a copper-hued base; the body showed a maculopapular ham-colored eruption and the skin of the soles and palms was desquamating and thickened; there were decided coryza, snuffles, mouth breathing, fissured lips, in a word, the clinical picture of congenital lues. The spleen and liver at this time were distinctly palpable. Then the diagnosis of the original condition became clear of course and the cause for the pseudoparalysis became very evident. Subsequently distinct anal condylomata made their appearance. The forearm was immobilized with lateral splints by Dr. Reiss, the surgeon in charge, and the lues was treated in the dermatological

service of Dr. Gottheil, by the administration of calomel gr. 1/20 to 1/10 three times daily and by the twice daily application to the umbilical region of a pea-sized piece of white precipitate ointment covered with a flannel abdominal band.

In three and a half weeks no false point of motion or crepitation was detected and in four and a half weeks the surgical aspect of the case was closed. Under the aforementioned antispecific treatment rapid improvement was made.

It seems to me that the sequence of events in this case—pseudoparalysis (epiphysitis), epiphyseal separation, and lastly the cutaneous outbreak, is interesting and instructive and warns us to be on our guard in diagnosticating mono-articular involvements in young children. When brought face to face with a similar case in the future, after excluding trauma, fracture, sepsis, perhaps infantile scurvy, it may be well to turn our thoughts to the possibility of osteochondritis epiphysaria luetica neonatorum.

274 Lenox Avenue.

TWO CASES OF GASTROSTOMY WITH EXAMINATION OF STOMACH WALLS BY MEANS OF THE CYSTOSCOPE.[1]

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HOUSE SURGEON, CITY HOSPITAL, BLACKWELL'S ISLAND.

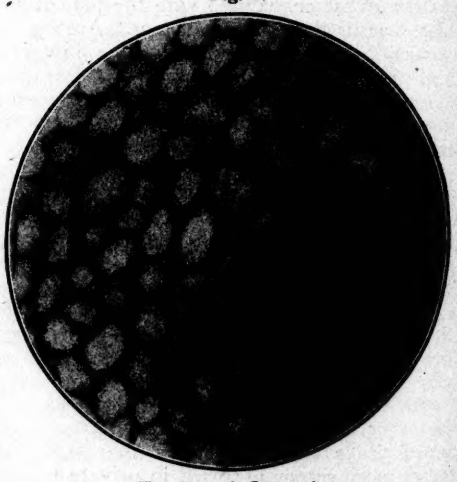
In reporting these two cases, I think we now have a very valuable method of obtaining information about the stomach in similar cases.

Case I.—P. K., aged forty-one years; nationality, Ireland; admitted to Hospital December 13, 1904; occupation, orderly. Family history is negative. Personal history: Denies any venereal disease; chews tobacco; smokes moderately; takes a moderate amount of alcohol, according to the patient, three glasses of beer daily,—taking this directly into his stomach by means of a rubber tube leading into the fistulous opening of the stomach. Previous illness: Had malaria eleven years ago; typhoid fever nine years ago; he was sick at that time for three months. During the early part of his convalescence from this fever the patient noticed he had some slight difficulty in swallowing. This difficulty increased until, at the end of the fourth month, he could not even swallow liquids and had to be fed per rectum. He lived on rectal feedings for the next three months entirely, and during this time lost considerably in weight. At the end of this time he was operated upon, a gastrostomy being performed. Since then the patient has fed himself entirely through the fistulous opening. Since the operation patient has had no difficulty in maintaining nutrition, or has he had any gastric disturbances; his desire for food has always been good, and he is able to take all kinds of food. His method of eating is a very interesting one, in that he gets the full benefit of his saliva and also the pleasure of the taste of his food. He first masticates his food thoroughly, then expectorates the mass into a cup, in the meantime having inserted a funnel into the tube leading into the stomach, he empties as much of the contents of the cup as will half fill the funnel, then, taking a blunted stick, he pounds the contents of the funnel into his stomach.

At the time of the operation he weighed 92 pounds; at present he weighs 190 pounds. The patient, on being given some water to swallow, has a violent reflex cough within a few minutes, retches and expels the water which he has a tendency to swallow; upon passing an esophageal bougie, an obstruction was met 29 cm. down the esophagus, which could not be passed.

Method of Cystoscopic Examination.—Patient does not eat any food for six hours preceding the examination, in the meantime washing his stomach thoroughly until the water returns absolutely clear; then his stomach is filled with water, patient lying flat upon his back, and the cystoscope (Cabot) introduced through the rubber tube into the fistulous opening. The electric light is then turned on. The first thing brought into view is the walls of the fundus of the stomach (Fig. 1), the lining mucous membrane in this case looking pinkish-white and appearing in patches, giving the whole the appearance of large, flat, irregular cells and thrown into the characteristic rugæ. On close observation it was seen that the peristalsis took place in a slow rhythmic motion from the cardiac end toward the pyloric, namely in the longitudinal axis of the stomach; by moving the cystoscope toward the cardiac end this was brought into view. Here the appearance of the mucous membrane gave the impression of apparently smaller masses (Fig. 2), the folds here running into a very shallow funnel about 1½ inches deep, the cardiac orifice being closed and having an irregular outlet. When the patient was told to retch, the orifice opened about one-fourth inch in diameter; the pyloric orifice is also easily found by tracing the

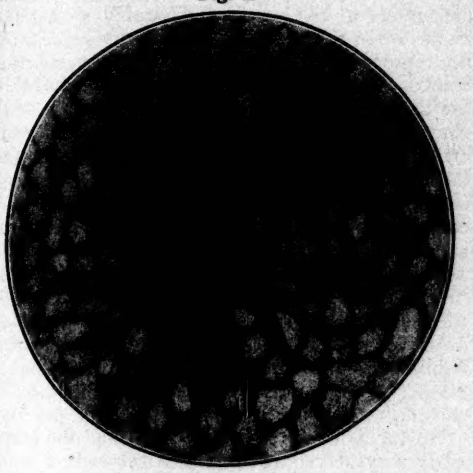
Fig. 1.



Fundus of Stomach.

lesser curvature of the stomach, the mucous membrane having the appearance of the cardiac end except that the funnel is not so narrow, or so long as that of the cardiac end, the size of the cellular masses apparently being the same as that of the cardiac end. The orifice was never com-

Fig. 2.

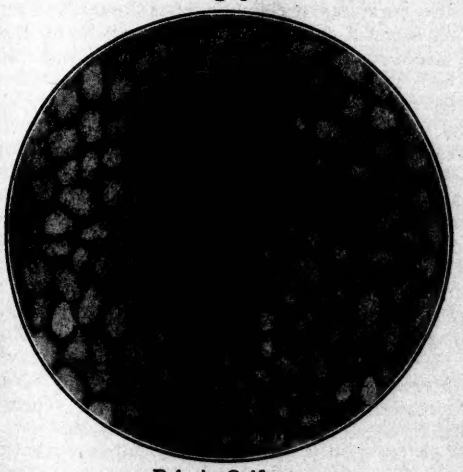


Cardiac Orifice.

pletely closed and bubbles of air and mucus could be seen going through. The diameter of the orifice appeared to be about one-half inch, the pyloric ring being easily seen (Fig. 3).

To see if there really existed an opening through his esophagus, no matter how small, the

Fig. 3.



Pyloric Orifice.

patient, while under operation with the cystoscope, was given a small amount of dilute methylene blue solution to drink, and he attempted to swallow it, the cardiac orifice in the meantime being very closely watched for about twenty minutes, and during this entire time no fluid whatsoever came through the cardiac opening; then the patient was told to retch, and by this means the cardiac orifice opened, but, nevertheless, no fluid came through, the water in his stomach not having the faintest tinge of blue, so that evidently the patient has complete obstruction of the esophagus due to a stricture following typhoid fever.

Case II.—H. H., aged thirty-four years, Russian; occupation, pedler; admitted to hospital December 13, 1904. Family history negative. Personal history: Uses alcohol moderately; does not use tobacco in any form. Previous illnesses: Had smallpox when a boy; about the same time had some difficulty in urination; was operated upon for this; does not know the nature of operation; otherwise his venereal history is negative; says he never was sick until six months ago, when he commenced to have some pains in the back and soon afterward noticed some difficulty in swallowing. Present illness: Patient came to hospital, complaining of severe pains in his back and stomach, also difficulty in swallowing; he is unable to lie on his left side, has lost considerably in weight, and has a cachectic appearance; he has no cough and is not dyspneic; no pains in the chest; appetite is very poor; has not vomited; has had diarrhea for the past two weeks; the character of the pains in his back are of a dull, continuous sort, with exacerbations of lancinating pains radiating from the small of his back anteriorly to the pit of his stomach and up toward the cardiac region.

Physical examination.—Patient extremely emaciated, cachectic in appearance; few scars on both legs and enlargement of the left supraclavicular. and axillary glands; the pupils react equally to light and accommodation, no nystagmus, conjunctiva anemic and slightly jaundiced; tongue clean; chest barrel-shaped and marked retraction of supraclavicular and intercostal spaces. Lungs, slight dulness over left apex anteriorly, otherwise negative. Heart, apex beat neither visible nor palpable, located by means of the stethoscope, one-half inch within midclavicular line; outlines of heart normal, slight roughening of the first sound, second aortic accentuated. Pulse, quick, regular, slight amount of arteriosclerosis. Abdomen, tenderness in right hypochondrium; no mass is felt. Slight rigidity of recti. Liver edge is palpable; reflexes normal. Blood examination shows red cells, 2,000,300; moderate poikilocytosis, few normoblasts, microcytes and macrocytes, hemoglobin 35 per cent., leucocytes 15,500.

On cystoscopic examination, after some effort, a limited view of the stomach was obtained. At first the fundus was seen, the walls being of a red, glary appearance, without the apparent cellular characteristics of the first case; the rugæ were easily seen and had the same appearance, as regards direction, as the first case; the pyloric orifice was then brought into view, and here also the lining layer had a red and very much inflamed appearance, the pyloric funnel

being about one inch wide at the base, the apex being one inch wide; on account of the slant of the fistulous opening, it has been impossible, up to the present date, to obtain a view of the cardiac end.

In this case, on attempting to pass an esophageal bougie, an obstruction was met about 30 cm. down the esophagus; the patient, however, has not a complete obstruction of the esophagus, as he has been able to swallow some liquid food with considerable difficulty, the nature of the obstruction being probably a malignant stricture.

THE CONTINUOUS CURRENT IN RELATION TO INFLAMMATORY EXUDATES.[1]

BY MARGARET A. CLEAVES, M.D.,
OF NEW YORK.

THE striking and hypnotic phenomena attendant upon a display of high frequency and high potential electromotive forces have attracted the widespread attention of the medical profession; and the average practitioner, whether practising as an electrotherapeutist or whether without knowledge of the nature and potency of an expenditure of electric energy as a therapeutic measure, is disposed to regard these manifestations of electric force not only as the best, but as the sole means to the end, ignoring completely the continuous (galvanic) current, a knowledge of which is fundamental to a study of the physical phenomena of electricity as well as its therapeutic uses. Doubtless the perfection of mechanisms for the administration of static and high frequency currents, and the ease of their application has contributed largely to this state of affairs. The rank and file of the younger physicians, both in point of time and experience are, unfortunately, frankly ignorant of, or at least chaotic in their knowledge, of this fundamental manifestation of electric force.

For the past fifteen years the writer has had the various manifestations of electrical energy in daily use, save high frequency manifestations, which have been in use for but eight years, in a private and clinical practice covering a very wide range of conditions. In the class of cases to be considered in this paper, as well as many others, the best results are always obtained by the use of a continuous electromotive force.

The effects which concern the physician most are (1) physiological and (2) chemical. It is possible that there are physiological effects due to the nervous stimulus, which can be distinguished ideally, at least, from those due to direct chemical or physical action. Long since, however, the opinion was expressed by DuBois-Reymond that excitation with the continuous current was nothing more than the first stage of electrolysis in excitable tissue, and the consensus of opinion to-day is that this is the correct definition of the physiological action of the current. A consideration of the chemical effects of the current, therefore, precedes that of the physiological. The rationale of the action of the current upon inflammatory exudates is based upon its chemicophysical action.

There are four ways in which electrolysis can affect, in the living body, such tissue as muscle by its chemicophysical action: (1) By the chemical effects of the products liberated at the electrodes or in the substances of the tissues; (2) by the removal of electrolytes, chiefly inorganic substances which are necessary for the vitality of the tissues, leading to increased absorption of the elements, and, perhaps, in consequence, to increased activity of the general nutrition in the tissue, or if the action be more intense, to diminished vitality, degeneration and death; (3) by cataphoresis, leading to increase of transferred substances around the cathode, and diminution around the anode and the consequent increase of eliminating or absorbing activity, by which a tissue returns to healthy equilibrium, or to any of the results which follow the disturbance of equilibrium beyond the limits of health; (4) by raising the local temperature in both cases, but the physiological change may be very different.[1]

So far as conductivity is concerned the human body may be regarded as a .6 per cent. of a one per cent. solution of common salt. It conducts by reason of its inorganic constituents, which, in connection with the fluids are in a state of ionization, a condition which renders them the best form of an electrolyte. Whenever a current passes through a tissue or proteid solution it is conducted almost entirely by the salts contained therein. Chemical effects produced on the proteid constituents are due to secondary actions of the products of electrolysis of the salts. Therefore when a current passes through living tissue it produces two effects—physiological and chemical. The first or physiological effect is dependent on the second or chemical. The physiological follows the changes which take place in the tissues as the result of the chemical action. From a current of short duration a physiological action is always produced, as for example, with a shock from an induction coil. Therefore this is selected to establish the function of excitable tissues. Such a shock, however, while adequate to excite maximum muscular contractions, is capable of very slight electrolytic effect, *i.e.*, an effect characterized by the products of electrolysis at the poles.

With the continuous current, however, a very different effect is produced, when it is gradually increased from subminimal strength. There is no such excitation of excitable tissues.

So far as it is at present known no current can pass through such a mass of materials as that of which the human body is composed without effecting electrolytic decomposition, or, in other words, the only medium of conduction in such a mass is chemical decomposition or electrolysis. It does not matter whether it is a continuous or an al-

1 Read before The Section on Medicine, New York Academy of Medicine, December 20, 1904.

1 On Electrolysis of Animal Tissues. G. N. Stewart, Studies from Physiological Laboratory, Owens College, Manchester, England.

ternating current, electrolytic effects are produced only in the medium immediately surrounding the poles or electrodes, but also in the intrapolar or intervening tract. But with all forms of alternating electromotive forces, whether of low or high frequency and static electricity as well, little, if any, accumulation of electrolytic material takes place at the poles. It is true that the electromotive force produced by a static machine tends to the production of a continuous current, but to decompose a single drop of water by this means requires an expenditure of energy totally at variance with the amount of chemical work done; while the very small, comparatively speaking, electromotive force of a series of chemical generators or a continuous current dynamo causes this chemical action instantaneously with an accumulation of its products at the poles. A high frequency current causes the body to be traversed by currents of great ampèrage without sensation, but here again there is no polar action as with the continuous current. The latter energy judiciously expended will do the work of the former but an expenditure of the energy of high potential and high frequency currents will not produce the chemicophysical effects of the continuous current, characterized as it is by polar action, *i.e.*, the accumulation of the products of electrolysis at the poles, and upon this property therapeutic indications are based. Profound chemical changes are established which may result in the death of the tissue, as, for example, in the puncture of a mole. Here the current is turned on gradually. There are no muscular contractions, but in a few moments' application there is complete destruction of the growth by the chemical action of the current, and the resulting interference with the circulation.

A given quantity of electricity passed in the form of a series of swift shocks, by an unidirectional current, may exhaust the muscles and nerves, and lead to gradual or sudden death. The amount of chemical decomposition caused by the current will be the same in both cases, but the physiological changes will be very different. It is impossible to dissociate the two chemical effects of the current, electrolysis and phoresis, as they are closely allied, and do not take place independently the one of the other.

By electrolysis is understood an electro-analysis of the fluids and salts of the tissues, which serve as electrolytes. By phoresis is understood that particular kind of osmose due to the action of an electric current passing through a porous septa no matter what its direction. But the direction of the current is from the positive to the negative, or from the anode to the cathode, and, therefore, cataphoresis is the most characteristic phenomena of the phoretic action.[1]

The action of the physical effects of the current may be formulated as follows: Electrolysis chemically and cataphoresis mechanically alters the amount and distribution of salts necessary to the proper nutrition and function of the various parts of the living organism. By the latter there is a direct transference of the fluids and salts by way of the cell walls, muscle septa, coats of blood vessels, sheaths of nerves, skin, serous and mucous membranes, in fact all animal membranes which from the physical point of view are all the very best kind of porous diaphragms. Primarily this action takes place throughout the tissues interposed between the electrodes (not necessarily the nearest way but along the path of best conduction), but secondarily its influence is felt beyond the interpolar region. Just as it is impossible for a local hemorrhage to exist without its influence being felt beyond the immediate site of the hemorrhage, just so it is impossible to drain a part cataphorically without the influence extending, even to the entire organism.

This physical effect may be carried to the extent of completely cutting off the blood supply, thereby causing immediate and actual destruction (electrolysis of a mole); or by interfering with it to such an extent that there is no channel left by which the inorganic constituents and proteid nutriment can be conveyed to the part with which to feed it, and death from starvation ensues (absorption of an organized inflammatory exudate or an intramural uterine fibroid); or, in lesser degree, only the normal ionization and osmotic action characteristic of living tissue and necessary nutrition and normal function. In this latter instance the same physical effects of the current results in a stimulation of normal chemicophysiological processes, *i.e.*, the movement from ion to ion throughout the interpolar circuit, the bodily transfer of complete neutral molecules and the normal non-electric osmosis. By this action nutritive changes are initiated and, by a sufficiently frequent repetition of the use of the current, are subsequently fully established. The one condition or the other will obtain according to the quantity of the current and the manner of its use, that is, whether a strong or a mild current is used and whether the application is characterized by current distribution or current density. The use of a strong current of short duration, characterized by a current density, has either an intense irritant or else a destructive action, whereas the same current if characterized by current distribution will produce an entirely different effect because by reason of the increased electrode contact (square inch area), the energy expended in each square inch of surface is diminished in proportion to that increase.

A mild current if long continued will cause a profound change in the amount of fluids and salts in a part, and in this physical fact is to be found the therapeutic indication in pathological states, whether characterized by a diminished blood supply or under nutritive activity, pelvic exudates or a benign degenerative process, or by an excess of fluids as in a subacute articular rheumatism

[1] The physical phenomena of electric osmose is always known in electrotechnics as cataphoresis and does not refer to the introduction of drugs or cataphoric medication.

for example. The nutrition and healthful function of the living organism as a whole, as well as a part, is absolutely dependent upon the maintenance of the normal proportion of the fluids and salts. It follows, therefore, that the removal of the fluids and salts from a part, a fibroid, for example, by the action of the current, even though the removal be but temporary, will tend to the death of the tissue thus acted upon. Morbid growths and all suborganized material are less well provided with blood vessels than normal tissue, and such an action will tend to interfere with the circulation, with the result of depriving the part of its proteid nutriment, or, in other words, starving the outgrowth or exudate.

Such then is the rationale of the action of the current in inflammatory exudates.

To no body of men is the subject of inflammations and their sequelæ of greater interest than to the general practitioner. The intimate pathology of inflammation and inflammatory exudate is the same, no matter what organ or tissue is implicated varying only with the anatomical site and structure and physiological function. The inflammatory process may occur during the progress of a typhoid fever, more rarely in these days of a puerperal fever; it may follow an operation for appendicitis or a uterine curettement, and in each and every such instance it is the venous distribution which suffers. The initial lesion may have been a para- or perimetritis which often, despite the best that classical medicine affords, stops short of full absorption of the products of inflammatory action. Masses of exudates remain in the pelvis, limiting mobility of the uterine organ, and drawing it to one side or the other. The broad ligaments, one or both, are thickened and contracted, and the ovaries are also involved in the exudative mass. Sometimes the process has been so extreme as to agglutinate all the tissues, completely roofing the pelvis in. The patient suffers from pain, weariness, dragging, backache, dysmenorrhea and disability, as well as from reflex nervous phenomena. Normal circulatory processes are impossible, and by reason of the pressure of exudative masses, tissues and organs are not properly fed. When the process goes on to the formation of connective tissue bands the case is still further complicated. In postoperative pelvic cases the presence of scar tissue not only limits function but contributes as well to untoward nerve and mental conditions. Or the inflammatory action may have been of a septic or rheumatic nature involving a joint. The acute lesion has been recovered from, but the articulating surfaces of the affected joint or joints are covered with the products of the inflammatory action. Their movement is limited and such movement as the roughened surfaces permit is the cause of pain. Additionally the case is complicated by the presence of the inflammatory exudate about sheaths of tendons. The arm or member is board-like in its feel. There is diminished mobility. If a forearm and hand, pronation and supination are practically nil, also flexion and extension. The skin is blue and cold and the patient is disabled.

An acute neuritis may have passed, but as a result there is left an inflammatory exudate about the sheath of the nerve, leading to pain, rigidity or disability. Through the pressure and interference with the circulation congestive and low grade inflammatory conditions are perpetuated and the patient becomes the victim of chronic aches and pains, variously diagnosed as neuralgia, lumbago, rheumatism, etc.

Mucous membranes are similarly affected by inflammatory action. An endometritis with thickening of the endometrium may take place, and in consequence of constant recurring congestions, pain and disturbance of function follows. A cystitis becomes chronic and as a result of the throwing out of inflammatory exudate the mucous membrane is thickened and corrugated. The vesical function is interfered with even to such complete incontinence as to lead to the suspicion that fistulæ are present. The urethral canal only may be involved. The nasal, pharyngeal and conjunctival mucous membranes likewise become affected as a result of recurring inflammatory conditions. The Eustachian tube suffers in consequence of the extension of catarrhal inflammations, and the membrani tympani become thickened and retracted. Turbinated bodies hypertrophy and tonsils become enlarged and hyperplastic. Corneal opacities follow upon the throwing out of the products of an inflammatory action in a keratitis, for example. These exudative inflammations in some instances recover very completely without special attentian, but in a great many instances they go on to the formation of organized inflammatory products which interfere with function, cause pain and disability, and stand between the patient and that sense of well-being so necessary to a useful and happy existence. It is not enough for the man that he gets well of his typhoid fever if he is left with a leg which interferes with his usual avocation, for the man that he recovers from an operation for an appendicitis, or for a woman that she is successfully curetted for a fungoid endometritis, if in turn they are handicapped by swollen, clumsy or disabled members, as in phlebitis involving the leg or legs.

Nor, again, is it sufficient for a woman to recover from the acute condition of her parametritis if there follows constant suffering, pain, disability, impaired function, with but one week out of the four of comparative comfort, if any. Nor is it sufficient to have passed the agonies of an acute neuritis if a heritage of rigidity, stiffness with recurrence and exacerbations of pain due to pressure of organized inflammatory exudates follows. These handicaps are not accepted by the average man or woman with complacency and finality, nor should they be. Every means should be exhausted to restore, just as nearly as possible, every organ or part to its normal condition. If possible, inflammatory

processes should not be permitted to go to the extent of organized exudate when glands, neurons and muscle fiber have suffered beyond repair and absorption becomes a much more difficult thing. For many years, as a result of certain clinical work, the writer has believed that classical medicine could secure to itself better results in this class of cases, if it not only appreciated what can be done in the earlier stages of the pathological change, but knew in what form and how to expend electrical energy safely to that end. But while the writer's case book affords illustration of the action of the form of electrical energy indicated both in acute and subacute conditions, the purpose of this paper is more especially to emphasize the value of the continuous current in inflammatory exudates even when pretty well organized. In reviewing the hundreds of cases cared for, both in private and clinical practice, the following illustrative conditions are noted: Phlebitis, exudative inflammations about the articulations of joints and sheaths of tendons, both rheumatic and septic, pelvic exudates involving the uterine organ, its mucous lining and one or both ovaries, the urethra, the bladder, the conjunctiva, the cornea, the membrana tympani, the nasal mucous membrane, the Eustachian tube, the pharynx and tonsils, the intestinal tract, intestinal catarrh, mucomembranous enteritis, the liver, chronic hepatitis, ascites from cirrhosis, perineuritis of the brachial, lumbosacral distribution, etc., and spinal cord lesions, as in tabes and following spinal hemorrhage. It does not matter what tissue or organ is affected, so long as it is possible to apply electrode contacts so as to expend the chemicophysical energy of the continuous current directly upon or within the mass of organized exudate. The less fully organization has taken place the quicker and better the result. If it has gone on to the formation of connective tissue bands little can be done for them beyond the improvement of circulatory conditions, softening the morbid tissues, and putting them in a better condition for manipulation by the skilled masseur or for the action of an alternating current. But so long as masses of exudates (other than bands), encroaching upon cavities, infiltrating mucous membranes, matting together the various tissues, muscular and vascular of a leg, surrounding articular surfaces or binding down sheaths of tendons are concerned, their absorption with restoration of function, complete or approximative, can be obtained painlessly and promptly by the use of a continuous electromotive force when other measures are of no avail. In this connection it may be said that the great difference of opinion concerning the results obtained in urethral stricture, a subject which has been pretty well threshed out in times past, has undoubtedly been due to incorrect differential diagnosis. Just so sure as the narrowing of the canal is due to the presence of the products of exudative inflammation in the mucous membrane limiting its caliber just so sure can a result be obtained by the use of the continuous current tending to the increase of its caliber and restoration of function, but if the canal is additionally limited by the formation of connective tissue-bands divulsion or cutting must of necessity be practised as well.

ILLUSTRATIVE CASES.

Of a series of seven patients treated for phlebitis, five of whom came under the writer's care because of the benefit received by each preceding member of the series, one was due to varicosities of the veins, three followed typhoid fever, one an operation for appendicitis, one a uterine curettage and one vaccination. Both legs were affected in one instance, and one each in the remaining six, five the right and one the left leg. The duration of the disease was variously from one month to two years. Classical medicine had been exhausted in all the chronic cases and even in the recent case. Rest in bed in the horizontal position, lotions, bandages, massage, unskilled applications of a magneto induced electromotive force (Faradic) cautery, mechanical movements and exercise were among the means to the end. The treatment had been begun while the typhoid and surgical cases were still in bed. They were all, however, uniformly left with badly swollen legs, infiltrated tissues of characteristic brawny feel and great disability. The following case typifies the series with one exception, to which reference will be made later on.

Case I.—H. R. H., lawyer, aged thirty-eight years. Came under care in January, 1898. General health always good. Patient contracted typhoid fever in October, 1896, after a hard summer spent continuously in the city. The attack, a severe one, was complicated by shingles, and between the third and fourth weeks a phlebitis of the right leg developed. It followed the usual course, presenting classical symptoms. The leg was very much swollen and at first extremely painful. In addition to his forced recumbency, lead lotions and wrapping in cotton wool were used. Convalescence from fever was finally established and he was able to leave his house in January, 1897. At that time the leg was swollen, stiff, especially at the knee-joint, and uncomfortable but not acutely painful. He came under care January 15, 1898, just a little over a year after getting up from the fever. At no time in his life had there been any varicosities of the veins. During the year the entire leg was involved. From the ankle to the junction of the thigh with the body it was constantly swollen, most markedly in the evening, unwieldy and uncomfortable, and it was with the greatest difficulty he could walk or stand. A silk stocking extending from the ankle to above the knee was ordered when he first got up, and after being worn for a number of months was replaced by one from the ankle to the knee. At time of coming under care the leg was in practically the same condition as for the preceding year, *i.e.*, stiff, swollen, worse at night, larger than the other and with constant

sense of weight and discomfort. Walking and standing increased all the symptoms, especially the swelling, and the legs could be crossed only by raising the affected leg with the hands over the other. The silk stocking worn constantly from ankle to knee was removed with difficulty at night owing to the swelling.

Physical Examination.—Leg apparently much larger than the other; skin shining, purplish red in color; inactive in appearance; no varicosities. Temperature lower than in good leg; skin tense; no elasticity nor flexibility of tissues but a brawny feel with sense of infiltration and matting conveyed to the examiner's hand. No pitting on pressure. Measurement taken at five different points from the ankle to the upper part of the thighs showed a difference between it and the unaffected leg of from one-half to one and one-half inches, the greatest enlargement being at the middle of the thigh. The general health of the patient was good; general circulation fair, tendency to cold hands, skin of face and body ruddy in color, well-nourished, appetite good, no stomach indigestion, no constipation, no heart lesion, sleep good.

This case, as has been stated, typified the series save that in the case of double phlebitis, the original damage to the veins had been so great that the improvement secured at first was not permanent. The latter case in common with others of the series, however, made a good recovery characterized by diminished swelling and size of the extremities, more nearly normal elasticity of the veins, healing of an ulcerated area, less discomfort and ability to get about quickly and to move with normal accuracy. His occupation, that of civil engineer, necessitated incessant standing, walking and climbing over obstacles in order to look after his workmen. His size, weight and a constipation from which he suffered no doubt contributed to the relapse which followed. The ulcerated area broke down and there was recurrence of the other symptoms. Improvement was again promptly reestablished and the ulcerated area healed. On two occasions between two and three years after first coming under observation he presented himself with thrombi, once just below the knee (internal saphenous), and once above the ankle, about the junction of the middle and the lower thirds of the leg. There was stoppage of the circulation as evidenced by the heat, pain, redness, swelling and disability. Such was his confidence in the treatment which had been given him two years before that he came immediately when he was aware of his condition. Under treatment with the continuous current, polar indications being met, resolution was promptly established, relief following in both instances from the first treatment. All evidences of the thrombi disappeared within a few days, and at no time was he prohibited from following his usual business routine. Standing and walking were guarded against as much as possible.

The case following, a uterine curretage, came for treatment a few weeks after the operation, in the early stage of the pathological change, that is, before the products of inflammatory action were well organized. Her recovery took place therefore in a much shorter time than in the cases of long standing. In the first case detailed, the patient, who had been unable to stand, walk, or take physical exercise, after a week's daily treatment, played golf for a greater part of a day, walking ten miles during the progress of the game. On the day following he remarked that so far as feeling was concerned he could discern no difference between the two legs. The stiffness in the knee disappeared under the first treatment, this after a year's disability. Despite the subsequent relapse the case of double phlebitis improved in the same fashion and both patients discarded their silk elastic stockings in from ten days to two weeks.

Treatment was continued in the entire series of cases from a few weeks to three and one-half months and the improvement in every case was maintained save as instanced, being characterized by a nearly normal circulation, elasticity of the walls of the veins, disappearance of the inflammatory exudates infiltrating and binding down the tissues with diminution in size of the affected member and normal usage.

The continuous current was used in all of these cases; polar indications always being met; the greatest care being not to break the contact at any time during the treatment in order to avoid sudden contraction of the muscles. It was not only necessary to select a current capable of producing chemical changes, electrolytic and cataphoric, stimulating at the same time circulation and increasing the activity of the absorbents, in order to free the parts as far as possible from the products of inflammatory action, but at the same time a current that could be used so as not to cause any sudden muscular contractions, as such contractions might cause the vegetations or thrombi which are present in many of these cases to be released and set adrift into the general circulation.

Especially was this care exercised in the case complicated by the presence of thrombi. Rhythmic contractions of the blood-vessels are produced by the continuous current even when the electrode contact is unbroken but these do not possess an element of danger as do the sudden, sharp, muscular contraction of a broken electrode contact or of an alternating current. In every instance after improvement was established and the danger from muscular contraction reduced to a minimum, a sinusoidal current which produced long, undulating and far-reaching muscular contractions was used. At the end of three months these patients reported that they had 90 per cent. better use of their legs than when treatment was instituted, and bicycle riding was indulged in from 9 to 20 miles a day by some, while golf, tennis, swimming, walking and riding were practised by others.

Case II. Inflammatory Exudates Involving Joints.—C. J., aged thirty-four years; single; cook; exudates about articulations of elbow, wrist and hand, involvement of the sheaths of tendons with marked impairment of mobility. Six months prior to coming under care received a cut on little finger at second phalangeal articulation. Inflammation, septic, followed with extensive cellulitis of hand and arm which went on to suppuration. Pus evacuated through several incisions from carpus to elbow.

Little finger amputated. Sinuses closed in two months. Entire hand atrophied and stiff. Hand and forearm hard and boardlike, no play of tendons, elbow motion slightly limited, supination one-half normal, wrist, extension 80 degrees, flexion, 50 degrees; radial flexion absent, ulnar, 18 degrees. Fingers in extension at metacarpophalangeal articulations; wrist flexed at 10 to 20 degrees. Approximation of thumb to forefinger one and one-eighth inches, to middle finger one and three-quarters inches, to ring finger two and one-quarter inches. Hand useless, unable to do his work, cannot hold even a newspaper. Forty-four treatments were given extending over a period of five months and six days. Marked improvement followed the first treatment, characterized by increased mobility, a gain of one-half inch in approximation of thumb to other fingers, of 20 degrees in wrist flexion, improved circulation, skin warmer and softer and the entire hand and arm more supple. After four treatments extending over a period of two weeks patient could not only hold a newspaper but was able to lift a papier maché foot bathtub two-thirds full of water. At the end of three months patient flexed, extended, pronated and supinated injured forearm equally well with normal one, while wrist function was practically normal and he resumed his occupation. The carpophalangeal articulations were the last to yield. In all joint cases some of the smaller articulations are apt to be left with limited motion. This patient had been treated by means of massage and passive movements before coming under care.

Case III.—Mr. K., aged thirty-seven years; truckman; single. April 14, 1898. Exudates about articulations. Ankle-joint injury. At the age of five years fractured ankle, delayed union; several operations and portions of bone removed. Seton applied for two years. Fifteen years ago the ankle got weak, growing worse. Inability to stand on foot. Left leg 1½ inches shorter than right. Scars seen about joint. Pronation and supination absent. Extension and flexion limited to one-third of normal. No play of tendons visible at ankle. Patient received seven treatments extending over a period of nineteen days. After first treatment extension and flexion improved. Play of tendons visible at ankles on movement. At third visit more motion in ankle in every direction. At fifth visit flexion and extension almost normal. At discontinuance of treatment patient could stand on foot and had nearly normal motion.

Case IV.—Mrs. E., aged twenty-nine years, housewife. November 23, 1897. Exudates about right elbow, joints and sheaths of forearm. Four years ago right arm and hand became stiff from blood poisoning. Three years ago operation on elbow-joint for stiffness, arm in splints eight weeks. Pronation and supination very limited. Arm bent to an obtuse angle and shorter than other. Crepitus at elbow. Pain in muscles and around humerus and at wrist, more severe in bad weather, and intensified on lifting. Twelve treatments in 2½ months. After first treatment slight improvement in pronation and supination. After second treatment the pain in joint was very much less and troubled her only when lifting or after carrying a large package. The mobility and strength of joint continued to discontinuance of treatment. General health improved with freedom from pain. Patient reported a month later that improvement was maintained.

Ordinary traumatic and rheumatic cases yield much more promptly and completely than those in which sepsis has been a factor.

Case V. Pelvic Exudates.—M. R., widow, aged fifty-nine years. Domestic duties. From a constantly recurring low-grade inflammatory action exudative masses had been thrown out, complicating a retrodisplacement of the uterine organ and pressing upon a prolapsed and enlarged ovary. The general health was bad in the extreme. Anemic; worn and anxious facies, weight 152, temperature 98° F., pulse 66, weak. Heart normal. Uterus retroverted, held back by exudates; right ovary prolapsed, enlarged and sensitive; vaginal mucous membrane red and congested.

Twenty-eight continuous current applications were given resulting in nutritional gain, *i.e.*, increased weight, improved color, better circulation, ability to sleep, lessening of nerve irritability and depression, and improved digestion. Less pain and congestion; right ovary smaller, less sensitive, less markedly prolapsed; absorption of exudates. An intolerable existence made tolerable without restoring organs to correct anatomical position or to physiological condition.

Case VI.—Mrs. —, aged forty years. Had a severe inflammation involving all the pelvic tissues. She came under the writer's care in 1893 after several years of invalidism, during which time she was bedridden for at least three weeks out of four. She drifted from one gynecologist to another, and there was no lack of talent in the coterie of brilliant men she quickly enumerated.

Every physical examination, according to the history given, produced an exacerbation of her trouble. She had constant pain in the pelvis, leucorrhea, dragging and weariness of limbs, backache, disturbed digestive functions, dysmenorrhea, and every month or two an attack of inflammation which kept her in bed and tied to hot douches, applications, etc.

Forewarned was forearmed, and in examining

the patient the greatest care and gentleness was used. Although discomfort followed there was no inflammatory exacerbation. The pelvis was found literally roofed in, the uterine organ immobile and the ovaries bound down in the exudative mass. So great was the encroachment upon the cavity that the vaginal electrode could only be introduced from one-third to one-half its usual length. The greatest care was exercised to prevent either mechanical pressure or too great current density at the vaginal vault. The task demanded all the skill and experience possessed in this class of work as well as the most exact technic and knowledge of the properties, physical and physiological action of the energy used, for if a fraction of unit more of electrical energy should have been expended than was indicated, or a unit more of manual energy used in the necessary manipulation than the sensitive tissues could bear, the trouble would undoubtedly have been exaggerated.

The two to three months the patient was under care were months of constant anxiety; but by gentle, patient and persistent effort the desired result was obtained and absorption established with modification of all her symptoms and relief from some. The vaginal space was much less encroached upon and the pelvic organs became mobile. Treatment was given in the early fall of 1893, and the summer following the patient made the trip to the Yellowstone region as well as touring through the Pacific Coast without any return of her trouble. She was heard from only two years ago, and has remained well.

Case VII.—Mrs. C., aged thirty-three years. September 7, 1894. Intramural fibroid developed in right and anterior walls of uterus; ovaritis, right; exudates, right side; uterus immobile, canal tortuous; pelvic pain, soreness, sensitiveness to pressure, especially right iliac fossa; cruralgia (pressure); constipation; profuse and premature menstruation. Twenty continuous-current treatments in all were given extending over a period of four and one-half months. Result: complete relief of all symptoms, disappearance of exudates, return of uterine mobility, regular bowels, regular and normal menstruation, relief of crural pain and establishment of general health. Fibroid mass firmer, harder and better defined. Slight diminution in size, due in part to the better definition of the mass and complete cessation of symptomatic evidences of disease. Treatment was suspended January 24, 1895, and almost immediately the patient, who had been sterile for seven years, became pregnant, passed through a normal pregnancy, and in the spring of 1896 gave birth to a well-developed child. There was no trouble at confinement and the patient has remained absolutely well all these years. The physician referring the case informed the writer a few days prior to the reading of this paper that both mother and child have been in the best of health ever since its birth, now fully ten years.

In a case referred to the writer by a general practitioner of this city, with a diagnosis of cirrhotic liver and ascites, the amount of fluid estimated at one-half gallon, ten treatments were given extending over a period of five weeks, resulting in complete absorption, diminished abdominal measurement, increased vigor and improved muscular tone. Although the writer questioned the diagnosis of cirrhosis there was no question as to the existence of some obstruction to the circulation, as the ascites was readily demonstrable—there was no lesion of the heart nor the kidneys.

A patient, aged thirteen years, with trachoma and a corneal opacity following a keratitis, was cured of his trachoma and almost wholly relieved of the exudates causing his corneal opacity, by the use of the continuous current. For the trachoma the action of the anode upon an oxidizable metal was utilized. When he came under care he was an object of charity because of his disability. He is now, some eight years later, employed as a bank clerk at a salary of $1,000, supporting not only himself but his mother and sister. These statements are made in order to emphasize, from the point of sentiment as well as dollars and cents, the value of the relief to the individual and his friends from conditions which are not relieved by the usual measures. The ascitic case had not yielded to the use of medication although there had been some improvement. The chemicophysical action of the current stepped in to alter and stimulate the circulatory conditions, thereby establishing absorption of the transudate and increasing the patient's general muscle tone.

RHEUMATISM AND THE EYE MUSCLES.[1]

BY FRANCIS VALK, M.D.,
OF NEW YORK.

It would be an act of supererogation for me to say anything about rheumatism before this society. You, as general practitioners, must be much more familiar with this pathological condition as it exists in all other parts of the body than myself, except, if I may so state it, when we have an involvement of the eye, or more correctly stated, the muscular apparatus of the eye, due to a rheumatic diathesis.

This paper does not treat of the many special diseases of the eye that may involve the eyeballs essentially. Those conditions may be fully described in the numerous text-books of the present day, but I hope to demonstrate the influence this rheumatic condition may have on the muscular apparatus of the orbit, or in other words, on the rotation of the eyeballs. The etiology of rheumatism seems to be an undecided question. If we follow Haig in his investigations we may feel sure that the question is settled and that the "uric acid in the blood" will account for all the symptoms that may arise in the human sys-

[1] Read before the New York State Medical Society, at Albany, N. Y., February 1, 1905.

tem, even that it may cause the "prominent eye," which in the opinion of most oculists is due to myopia or to some pathological condition behind the eye. My honored teacher, Professor William H. Thomson, of New York, makes a very decided distinction between rheumatism and gout, and says, "True rheumatism, on the other hand, is caused by a specific bacterial infection" (*Medical Brief*, p. 946), and furthermore, Osler says, "that rheumatism and gout are supposed to be due to the formation of some toxic material within the body, or to the inadequate elimination of some such material." I would also mention a discussion on ocular conditions in which Dr. Koser, Williamsport, Pa. (*New York Post-Graduate*, June 1896), stated that "one of his patients had been repeatedly tenotomized by others and that before he would personally operate on this man he studied his habits of life most closely. Then he found that the man was the victim of uric acid poisoning. More than this, he had noticed that this was the the cause of these violent headaches and the varying results in testing for ocular insufficiencies. He felt positive that these cases were almost invariably examples of uric acid intoxication." Whatever then may be the etiology of this affection of the body, whether it may be "uricacidemia" or a "specific bacterial infection," we do know that clinically we have certain symptoms that are called rheumatism and others, which are referred to, a different pathological condition of the blood, called gout. But I am not aware of any statements which refer to an affection of the eye muscles as due to this condition except under the head of a paralysis or a paresis. Fuchs (p. 602) says, "Rheumatic paralyses are frequent. By this term we understand those paralyses in which, judging from the accompanying symptoms, the lesion is situated peripherally and for which no cause can be found except possibly the action of cold." Landolt, Linnell, Noyes and others make the same statements, but in all these cases we have diplopia with the temporary paresis, while Knies (p. 373) says, "the large majority of so-called rheumatic muscular paralyses do not belong to this category." All of these writers refer to a paresis of a muscular structure of the eye, which may be due to rheumatism, simply because by a process of elimination we can find no other cause for the symptoms presented and which do not refer to the subject matter of this paper. They present certain symptoms not heretofore mentioned.

I do not intend to consider all the various diseases of the eye that are affected by or are associated with, rheumatism, as all the tissues of this important organ are liable to suffer from the various inflammatory diseases that may attack other similar tissues. In the course of an inflammatory condition of rheumatism, we may have an involvement of the cornea, sclera, choroid, retina, and nerve, and our text-books treat of all these conditions. Yet all this only refers to a distinct pathological condition of the eye and its adnexa that may be seen and appreciated by the usual methods of examination. But it is not with any of these conditions that we are concerned with at present. It is in the question whether we may have restricted, slow and painful movements of the eye that may be due to a rheumatic condition of the blood? If so, then the symptom of this condition may be found in the following histories: More or less inability to use the eyes for close work. The eyes will tire and ache with pain back of them, and a sense of relief when the eyeballs are pressed backward in the orbits. Headache is not a constant symptom, though Haig states that headache with eye symptoms, if from uric acid poisoning, seldom lasts more than one hour. I found this symptom in some of my cases. Now as to the diagnosis of this peculiar condition of the eyes, this can only be shown and demonstrated by the examination of the field of fusion and the field of version. Before we proceed, then, we must consider the movements of the eyes according to the laws of nature in the different planes of motion. First, by the action of the lower brain or the automatic part, which controls the field of fusion, and secondly, by the higher centers, or that of control, which limits the field of version. Here, then, we have two very important functions of the human eye: Fusion or the guiding sensation, that receives its force to act, by the stimulation of the retina, so that the images shall be on corresponding parts. When this is measured, it seems to form a field, mapped out on the retina, 30 degrees outward, 8 degrees inward, 2 degrees upward, and 3 degrees downward. This we may consider as the normal field of fusion, our standard test. Now, in the region of control, we have the field of version, also a distinct field which is limited by the most complete rotation that the eye can perform under the stimulation of the will to all parts of the field of space. This field also seems to have certain limitations, as the eye turns about the center of rotation, and we find the limits to be in health about 55 degrees inward, 50 degrees outward, 45 degrees upward, and 60 degrees downward. This is the normal or natural rotation of the eye in these two fields, and if we take them as our standard tests, we may well appreciate any abnormal conditions in the movements of the eyes as may be shown clinically. To appreciate the extent of these fields we must bring to our aid certain tests by which these measurements can be made. The field of fusion is found by the prism test, using a series of prisms and placing the apex of the prism over the muscle attachment to the sclera. As an illustration, if we wish to test the rotational power of the internus in the field of fusion, we place the apex of the prism inward toward the nose. Then find the strongest prism with which the diplopia produced can be overcome and single vision again established. Proceeding in like manner with all the four recti muscles, we com-

pare our results with the standard test mentioned and thereby note any deficiency in power, any excess or any failure to cause the images to fall on corresponding parts of the retina. In making this test our image is that of a candle placed at twenty feet from the eye to be tested. We then proceed to test the field of version or the turning of the eye under the stimulation of the will. We may test this field by directing the patient to follow the motions of the finger or a pencil, held about one foot in front of the eye to be examined. The pencil or finger is now moved about to different parts of the field of space, as to the right, left, up and down or in any direction. As this test object is moved about the field, we note the movements of the examined eye to see if it lags behind its fellow or wavers at the extreme limits of the field to which it can be carried and yet clearly seen. This test, while useful and of great service in cases of paralysis, yet to my mind is somewhat crude, hence, I would urge the examination of this field always with the tropometer. This instrument keeps the head fixed, and as the cornea is watched through the small telescope, we can see and record the extreme rotation of the visual lines from the movements of the edge of the cornea on the index in the eyepiece. This test is very accurate and delicate. After it is made and the result recorded we must compare this with the normal field of version as I have suggested. Now in the condition to which I refer you, this rheumatic diathesis, we may find either one or both of these fields restricted, not in any one direction, as is shown in the cases of heterophoria, but in all directions of the rotation of the two eyes. I will burden you with the histories of only two cases.

Case I.—A. H., aged forty-five years. Refraction, hyperopic astigmatism, against the rule. Field of fusion, adduction, 15 degrees, abduction, 5 degrees. Field of version 50 degrees inward, 45 degrees outward. Accommodation normal. Has homonymous diplopia on testing the fusion power of the externi and heteronymous or crossed diplopia on testing the fusion power of the interni, showing a want of quick action and adjustment of the central fusion power, both outward and inward. We also note that the fields of fusion and that of version are somewhat below the normal extent. He has a history of uric acid with headaches and inability to use the eyes with comfort. Treatment, referred to his physician.

Case II.—Mrs. J. F., aged forty-three years. Twitching of the left eye; eyes jump and feel "as if dragged," insomnia and pain in the back of the neck. No headache, but strain after reading. Refraction, hyperopic astigmatism. Vision normal, accepts no glass. Field of fusion only 5 degrees inward and 2 degrees outward. History of rheumatism; treatment of same.

The histories of these two cases well present the symptoms that may be noted, and furthermore, we may find a certain diplopia when a red glass is placed before one eye, as then in certain parts of the field of space a red and white light will be seen when looking at a candle placed at 20 feet. This may be noticed in any part of the field, as to the right or left, up or down. This test also enables us to make the differential diagnosis from that of a paralysis of one or more of the ocular muscles.

In conclusion, let me state that while these cases may be very unusual, yet they may present certain interesting symptoms that may be present in any case of rheumatism or that may occur in the course of this condition, simulating ocular insufficiency. If so, we may account for them as due to the uric acid diathesis and the treatment is suggested. This, it goes without saying, must be directed to the general condition, and is not within the domain of ophthalmology, but lies wholly within that of the general practitioner.

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MEDICAL PROGRESS.

SURGERY.

Exposure of Spinal Cord and Canal.—The increasing frequency of operations upon the spine resulting largely from increased ability to localize chronic and subacute troubles, has brought into greater prominence the various technics for the exposure of this important lesion. WARREN STONE BICKHAM (*Annals of Surgery*, March, 1905 discusses the relative values of osteoplastic resection and of laminectomy, the features common to both operations and the technic of each. In an osteoplastic resection, a composite flap consisting of skin, soft and hard part, is partially excised en masse and temporarily turned backward and upward. This flap is finally returned to its normal place at the conclusion of the operation with practically all its structures in normal relation. In the operation of laminectomy, the spinus processes and laminæ with collecting ligaments of two or more vertebræ are completely freed from surrounding structures, excised and permanently discarded. In doing laminectomy, the operation should always be done, so far as possible, subperiostially, but it is well known that many surgeons never attempt to do this. In any event, the changes are that the periostium will be sacrificed, because the bones undergoing removal are so small, irregular and deeply placed. Furthermore in contrasting the two it should be noticed that the tendency in laminectomy is to create a narrow opening, whereas in osteoplastic resection, the wider and freer the incision the easier it is to handle. The method of execution of the two operations presents about equal difficulties in the hands of an experienced surgeon. As to permanent disability arising from weakness of the spine, it cannot be doubted that after laminectomy there is an impaired spine, while after osteoplastic resection the spine is practically as good as before operation. This is true whether or not the bone be replaced by fibrous or by osseous tissue. It is well known that patients have not infrequently lost the power of sitting up after laminectomy. This has led to the suggestion by many writers that a brace should be worn for many months after laminectomy. The writer therefore advises unquestionably in favor of osteoplastic resection. In spite, he says, of the favorable aspects of this technic, there is no doubt that to-day many more laminectomies are done

than resections. The manner of dividing the laminæ in either operation is of paramount importance. The important principle is that the instrument should have its edge placed upon the laminæ at or a little to the outer side of their center and be made to cut its way through the laminæ strictly at right angles. The author advises the use of Doyen's saw, as the best instrument for making the bone sections. This instrument is practically a Heys saw with an adjustable guard.

Anastomosis Between Stomach and Esophagus.—No subject in the wide domain of surgery is attracting more attention than the matter of intrathroacic operation. Muro Murphy, of Boston, has demonstrated with his interesting and remarkably simple positive pressure box that almost unheard of operative work can be done within the thorax under positive pressure while the well-known work in the negative atmosphere, which took its origin in Germany, is affording interesting results. Sauerbruch (*Zentralbl. f. Chir.*, No. 4, 1905) states that within the last few months he has obtained such results with his negative pressure apparatus as to justify his statement that the problem of intrathoracic operations upon the esophagus, particularly resection, may be considered to have been placed upon sound surgical basis. He opens the chest cavity through an intercostal incision and, quoting Mikulicz, he states that for success in this work three factors are essential, the first and most important of which is thorough asepsis. The technic of the anastomosis between the stomach and the esophagus is as follows The pressure in the chamber is from 10 to 12 h.g., skin, facia and muscles are cut through to the pleura. This is lifted into the wound with forceps and opened with the scissors. A sound or finger is passed through the pleural cut and the ribs are separated. The lungs are then withdrawn with tampons and the aorta and the esophagus with the two vagi become visible. The esophagus is then drawn into the wound. An opening is made through the pleura and peritoneum and the stomach lifted up through it. During this manipulation the vagi should be particularly protected. In the animal experiments an assistant passes an esophageal sound from outside of the chamber and the female portion of a Murphy button is pushed down the esophagus to the cardiac end of the stomach. The operator within seeks this portion of the button with the hand. The sound is now withdrawn, and the button made fast at the chosen position. Similarly the male portion of the button is introduced with the sound into the esophagus and placed in position. Purse-string sutures are of course placed about the button as usual. Neither the pleura nor the vagi are detached from the tube. The author considers a Lembert stitching of the button as unnecessary. This operation has been done recently on 13 dogs, three of which have died. None of these deaths were due to failure of the union or to infection, but occurred suddenly at a considerable time from the date of operation. This anastomosis is of service in inoperable stricture of the esophagus, in diverticulæ of the lower portion or indeed in any position or for any purpose where until the use of the pneumatic cabinet has brought it in vogue, operations of any kind have hitherto been out of the question. In a similar way, but by a slightly modified technic, the operator has succeeded in resetting large portions of the esophagus.

Extirpation of the Gasserian Ganglia.—Harvey Cushing (*Journal A. M. A.*, March 11, 18, 25 and April 1 and 8) discusses various operative methods for dealing with the ganglion in cases of major trigeminal neuralgia. The importance of total removal of the ganglion he considers it evident, and were the anatomical difficulties less, it would be the only method free from criticism. This method alone, according to our present knowledge, insures total and permanent freedom from pain. He gives details in full of his method, which is different from that of Lexer, subsequently published and similarly successful, in the management of the meningeal artery, in that Cushing, so far as possible, carefully avoids injury to this artery, and generally with success. He also favors removal of the zygoma for cosmetic purposes, the slight flattening of the face thus produced being less disfiguring than the prominence of the bone with the muscular atrophy that follows the operation. He has also been able, in many of his cases, to reach the ganglion without much loss of blood, and claims that the small opening made by his method affords advantages in this regard during the removal of the ganglion itself and lessens the amount of packing required. He has had little success with the use of adrenalin or other methods than packing in checking the hemorrhage. Blood-pressure observations taken before and during the use of anesthetics are valuable in this connection as showing the patient's condition, and Cushing thinks that possibly his one fatal case might have been saved had more attention been given to the warnings furnished by this procedure. The clinical histories of his twenty cases thus operated on are given in detail and the results summarized. He remarks that he has not in all cases followed Krause's dictum that the ganglion operation should be performed only in those cases where previous neurectomies have been given a trial. In well-developed major neuralgia he thinks temporizing inadvisable, even for the temporary relief it may afford. The most important of the post-operative complications are those of the eye, and it is well to have an understanding with regard to this before operation. The commonest sequel is injury to the abducens. For safeguarding the eye, Cushing uses rubber protective, and after the operation he advises the use of a large watch glass with the edges covered with adhesive plaster so as to exclude the air and continued as long as conjunctival irritation threatens. His paper concludes with a number of physiologic considerations on the functions of the nerves and some remarks as regards the pathology. The morbid lesions underlying true trigeminal neuralgia are not yet revealed. The paper is fully illustrated.

Pott's Disease in Children.—From an extensive study of the disease as well as considerable experience in dealing with same, Gorochoff (*Prakt. Vrach*, January 29, February 5 and 12, 1905) draws the following conclusions: (1) Tuberculous spondylitis is preeminently a disease of the young child. (2) The greatest number of cases is found between the ages of two and eight years. (3) In his hospital experience the author met a greater number of girls than of boys, the number of the former being almost double that of the latter. (4) The duration of the disease before admission to the hospital was between a few weeks and one year. (5) In the presence of undoubted predisposition whether because of heredity or on account of surrounding conditions of life measles and at times trauma may serve as the starting point of the disease. The complication of spondylitis by measles shows itself very rapidly in deterioration of the patient's condition. (6) The lumps were mostly found in the thoracic portion of the spine; the lower thoracic vertebræ were usually the most affected, and the curvature was generally limited either to these vertebræ or to the upper lumbar. (7) With the evacuation of the abscesses followed by filling up of the cavities with a ten per cent. solution of iodoform emulsion, or after a curettage done with the same aim in view followed by a hermetic closure of the opened abscess, satisfactory improvement would be observed in those lo-

calities where the skin has not grown too thin. (8) Cases of active surgical interference and further treatment with drainage also showed a considerable degree of improvement, though the most frequent postoperative complication was usually a febrile condition. (9) Correct methodical extension and counterextension in bed often, in combination with suspension with the Sayre apparatus, is to be considered as the best means in the majority of cases, of checking the development of the tuberculous process and of creating favorable conditions for the further treatment with corsets. (10) Besides the specific treatment it is absolutely necessary that resort be had to favorable climatic surroundings, as in special sanatoria at seashore, or on the mountains, but never at a hospital. (11) Out of six who died four were found to have suffered from pulmonary tuberculosis, and two had in addition fatty degeneration of the heart.

PHYSIOLOGY.

The Mechanism of Gastric Digestion.—A great deal of attention has been paid to the chemistry of digestion in the stomach at the expense of the study of the mechanical features of this process, according to P. GRÜTZNER (*Pflüger's Archiv*, February 22, 1905). Roux, Balthazard and Cannon were the first to study the movements of the gastric contents by means of the Roentgen rays, but the author devised a new method entirely. It consists of removing the stomach from an animal killed at a definite stage in the process of digestion, while the gastric contents are semi-fluid, and then plunging the stomach whose cut ends have been tied into a freezing mixture. The results of this method were of considerable interest and importance. First of all, the fact was revealed that the contents of the stomach distributes itself in a regular fashion, in such wise that the later portions of the meal have to pass through the middle of that portion which first entered the stomach and remained in contact with the walls of this organ, the later portions of the meal being thus prevented from touching the mucous membrane. The fundus is the region where the food is principally stored, remaining here in some cases for hours, without being mixed with a trace of gastric juice. During this time the amylolytic action of the saliva is completed. At the same time the food in the prepyloric and pyloric portions of the stomach, together with some pushed over from the fundus, is mixed with a richly acid and peptic juice and digested. The composition of the gastric contents differs in different parts of the stomach. This is a fact which should appeal particularly to those clinicians who are concerned with the study of the stomach contents. Under normal conditions the stomach empties itself completely after a certain time. Another fact to be noted is that with the lapse of time the contents of the stomach gets more and more acid, or more properly speaking, the reaction is more marked, although, in human beings, the amount of acid is diminished. This is attributed to the fact that the mucus secreted by the glands of the pylorus is markedly alkaline. These researches have important bearings on therapeutics. Thus the administration of pepsin and hydrochloric acid may be of no avail, since both of those do not reach the proper region of the stomach, belonging to the greater curvature rather than the lesser, in the latter case leaving the stomach too early. During health moderate drinking at meal time in no way disturbs the activity of the stomach.

Potassium in Cells.—The rôle that potassium plays in the physiology of the bodily cells is unknown, for there is hardly any knowledge as to whether potassium is really present in the cells, whether the potassium ash obtained from tissues might not come from the serum bathing them, nor is there any knowledge as to the distributing of potassium. Any researches that will illuminate this subject will be of incalculable value from the standpoint of therapeutics, for the rational employment of potassium or its compounds will only then be possible. A. B. MACCALLUM (*Jour. of Physiol.*, February 28, 1905) has made a valuable contribution to this subject. By the use of hexanitrite of cobalt and sodium in solution and in the presence of acetate of sodium, he has been able to precipitate the minute amount of potassium contained in tissues placed in this solution. Upon washing the preparation with ammonium sulphide solution, the precipitate is colored black, so that its presence and distribution may be readily studied under the microscope. Potassium occurs in both the cytoplasm and extracellular structures. In the latter it is present as a product of impregnation and infiltration, and as a consequence there are few structures that are free from it. The cell nucleus does not normally contain the slightest trace of potassium nor does the head of the spermatozoon give the slightest evidence of its presence there. Nerve cells are wholly free from it, and this freedom extends to the dendrites and axons. External to the axons in medullated nerves potassium compounds obtain chiefly at the nodes of Ranvier and in the neurokeratin framework of the sheath, but at other points also often in minute masses of bizarre form. The potassium obtaining in cytoplasm occurs in two conditions, that of physiological precipitation, and that of physiological or biochemical condensation. The precipitation is not of a physical character, but may perhaps be of the nature of fixation, in an inert form, of the potassium in passive colloidal material in the cytoplasm. This precipitation is the process, apparently, by which living active cells dispose of the excess of the potassium salts which may invade them, as in the case of vegetable forms, in very great excess. In the condition of physiological or biochemical condensation potassium salts in solution are concentrated in some particular part or parts of the cytoplasm and excluded from the remainder. This condition of condensation, is, undoubtedly, in some cases at least, a factor in the metabolic processes peculiar to the cells, or species of cells, illustrating the condition. That salts can be in solution and at the same time confined strictly to parts of the cell is shown in spirogyra, in which, in the healthy normal form, the potassium is strictly localized to the immediate neighborhood of the chromatophor, which, in the intact cell, is supposed to function, in some degree, in the synthesis of the carbohydrates. In smooth muscle fiber the potassium found is scant and is diffused throughout the cytoplasm, but in striated fiber there is a condensation of the potassium in the dim bands, the rest of the fiber being from the element. When the fiber is in the contracted condition the potassium is most abundant in the middle third of the band, at least such is the case in the wing muscles of the scavenger beetle. It is the doubly-refractive substance of the dim bands that, apparently, constitutes the contractible material, that is, the inogen of Hermann, and its association with potassium suggests some relation of the latter, not with contraction, for smooth muscle shows that property, nor with tetanus, for in cardiac muscle the potassium is disposed as in ordinary striated fiber, but with rapidity of contraction, which distinguishes striated fiber from smooth. There is in the secreting cells of the pancreas of the guinea-pig and rabbit a remarkable concentration of potassium compounds in that portion of the granular zone which is immediately adjacent to the lumen, while the remainder of the cytoplasm is free from them. There are organisms which

manifest a distinct capacity to absorb potassium and among them is one, parasitic on *Spirogyra*, whose mycelial threads exhibit kaliophilism in a special degree.

Postnatal Changes in Thymus.—It has been shown that castration in animals causes a persistent growth and a retarded atrophy of the thymus gland. A histological study of these changes has been made by A. Goodall (*Jour. of Physiol.*, February 28, 1905), with the following results: In guinea-pigs the thymus at birth consists of lobules of adenoid tissue containing islands of squamous epithelium, many of which are invaded by polymorphonuclear leucocytes. This invasion results in cutting of masses of epithelium from their source of nutrition, hence they rapidly degenerate and form a concentric Hassall's corpuscle. If only one mass is thus cut off a simple Hassall's corpuscle will result; if several such masses, a compound corpuscle, which may for long remain surrounded by one or more of the peripheral layers of epithelium which have not been cut off from the lymphoid reticulum and hence do not degenerate. As has been shown by others, with advances in age of the animal the Hassall's corpuscles become small and largely disappear, while the lymphoid tissue diminishes and becomes to a great extent replaced by fat. The postnatal thymus is a source of lymphocytes, but does not produce pseudo-eosinophile or eosinophile leucocytes. The retarded atrophy resulting from castration is due to a delay of the fatty invasion and a delay in the process of the disintegration of the epithelium composing the Hassall's corpuscles.

OBSTETRICS AND GYNECOLOGY.

Reactions of Fetal Organs.—The many changes which take place in the maternal organs have been ascribed to the effects of chemical substances, which are generated during pregnancy and circulate in the blood of the mother. These affect primarily the genital organs and the breasts. J. Halban (*Zeitschr. f. Geb. u. Gyn.*, Vol. 53, No. 2) suggests that these same substances might gain access to the fetal circulation through the placenta and exert a similar effect on these organs in the fetus. He therefore examined the genitals and the breasts in a number of fetuses either prematurely or stillborn, and also several infants ranging in age from a few days to three months. The conclusions of his rather exhaustive paper are as follows: He thinks that there is reason for believing that the changes in the maternal organism are due to the action of chemical substances and his experiments warrant him in stating that a similar change occurs in the fetus. In the female fetus there is developed a hypertrophy and hyperemia of the uterus like that in the mother, and the genital bleeding seen very often in female infants, is simply an extreme degree of this reaction. The mammary glands of the fetus hypertrophy during pregnancy very much like those of the mother and also show characteristic histological changes. In male infants this hypertrophy is also seen in the prostate and the breasts. The toxins of pregnancy manifest there effects in the fetus in a manner similar to that seen in the mother and we have leucocytosis, damage to the kidneys and edema. Halban thinks that the active substances which produce these phenomena date from the placenta, and that they are in the form of an internal secretion derived from the chorion. After delivery has taken place and the placenta is removed, these substances are no longer thrown out into the circulation, and there results in both mother and child a puerperal involution of all the organs which have become hypertrophied during pregnancy, and also a regeneration of those which were damaged by the generated toxins. He believes, moreover, that eclampsia is merely the effect of a more pronounced toxic action of those poisons which are normally developed during pregnancy. The eclamptic poisons likewise are derived from the placenta, they circulate in both the maternal and fetal organisms and call forth the same changes in each. If the damage has not been too great, regeneration of the affected organs may take place after the placenta has been removed.

Sequelæ and Treatment of Abortion.—The medical diagnostician frequently fails to estimate the frequency and variability of infection in these cases in their true etiological relations to lesions of organs other than the genitalia, as well as the genitalia themselves. A. B. Reyns (*Am. Jour. Obstet.*, March, 1905) has given a review of the multiple sequelæ of abortions which accentuates the gravity of neglecting to give such cases most careful treatment and emphasizes the importance of early diagnosis of sequelæ which are so frequently attributed to other causes. (1) *Drug Injections.* Nitric acid forced into the uterus have caused death and insanity. Acetate of lead injection has caused death. (2) *Perforation of the uterus* has caused death from sepsis and injury to the intestines. (3) *Air embolism* has caused death in instances in which air had been forced into a uterus with a partially detached placenta by the introduction of the lip of a Davidson syringe. (4) *Endometritis* of the post-abortional type is frequently encountered. (5) *Uterine abscess* has been reported following criminal abortion. (6) *Endosalpingitis* is a common sequelæ. (7) *Ovarian abscess* and (8) *Tubo-ovarian abscess* occasionally occur. (9) *Metroperitonitis* has been reported as a cause of death following abortion. (10) *Thrombophlebitis uteri* with *Phlegmasia alba dolens* and *Pulmonary embolism* resulting in pulmonary abscess has occurred in cases which have been treated for tuberculosis, pleurisy and intercostal rheumatism. (11) *Hematocele.* (12) *Sapremia.* (13) *Septicemia.* (14) *Pyemia.* (15) *Tetanus.* (16) *Hemiplegia* and (17) *Hemianopsia homonymia* have also been reported as abortion sequelæ. The treatment of threatened abortion consists in the enforcement of quiet and absolute rest in bed. Vaginal examination should be limited and strict asepsis observed. Opium should be given to control the pains and an antiseptic pad placed over the vulva. Ice over the abdomen is contra-indicated as it stimulates uterine contraction. The patient should stay in bed ten to fourteen days after the hemorrhage ceases and should remain in bed two or three days at the time each menstrual period is due until the middle of pregnancy is past. The treatment of inevitable abortion should be expectant and operative. The former employed when the demand for evacuation is not urgent as in the absence of fever or profuse hemorrhage or odorous discharge. The intra-uterine tampon is more certain and scientific than the vaginal lampon and will prevent the blood from dilating the uterus. When operative interference is indicated dilatation of the cervix should be sufficient to admit one finger in a two months' pregnancy and two fingers in a three months' pregnancy. The conception product should be shelled out entirely, if possible. Curetting should be done with great care and a large curette used, since a small instrument may be pushed through the uterus wall with greatest ease.

Treatment of Eclampsia.—The principles of treatment of eclampsia consist in controlling the convulsions and eliminating the toxins. Chloroform is the most reliable agent for controlling the convulsions, but its injurious effect on the cardiac and vascular systems precludes its use for any extended period. Morphine restricts the eliminative function and prolongs the post-

eclamptic stupor. Chloral controls the convulsions, is less toxic than morphine, has no injurious effect on secretion and can be continued for long periods. C. B. REED (*Am. Jour. Obstet.*, March, 1905) considers the most satisfactory method to consist in the employment of chloroform until chloralization is complete. Veratrum would seem to meet the indications but has not been sufficiently tried. To secure elimination of the toxins, catharsis by means of calomel, croton oil or high colon flushings is of prime importance. Fluids by mouth and rectum and cupping over the kidneys will stimulate diuresis. Diaphoresis is best obtained by the hot-air bath or hot pack. The uterus should be emptied as speedily as possible by forceps or version, if the cervix is dilated. A closed cervix should be dilated by the fingers or rubber bags. If the cervix is rigid and cartilaginous Cæsarean section, vaginal or abdominal, should be resorted to.

THERAPEUTICS.

The Therapeutic Value of Relaxing Climates.—A change of air is a very common recommendation in many diseases and very few restrictions are appended to this advice. The usual climatic prescription is "some place in a good bracing climate." The indifference which the subject meets with among medical men and the purposeless manner in which it is applied is ably discussed in a paper by LEONARD WILLIAMS in a recent number of the *Edinburgh Medical Journal* (March, 1905). The change from the polluted air of the large towns and cities to the purer air of the country, is always good, but more attention should be paid to the other climatic factors, moisture, sunshine and exposure, which present wide divergences in many places, though all of these can lay claim to an equal atmospheric purity. In most instances, if anything beyond atmospheric purity is considered at all, it is that combination of conditons to which the adjective "bracing" is applied. The writer succeeds in demonstrating that this may be one of the worst of all climatic prescriptions, well enough for people in moderately good health, but apt to act as an irritant in abnormal states. A bracing climate is characterized by extremes, and its physiological effect is one of stimulation. Sufferers from chronic pulmonary, renal, cardiac or nervous disease, demand a sedative rather than a stimulating régime, and for this purpose, what the author of the paper calls a relaxing climate is more suitable. The meteorological factors which combine to produce a typical example of such a climate are, moderate, if any elevation, moderate exposure to the winds, full exposure to the sun, and a high humidity with its consequent equability of temperature. It is claimed that such a climate, despite its disagreeable effects on the healthy, is possessed of a much wider therapeutic range than that whose subjective effects are agreeable. These indications are ably considered in the author's article and it would pay most every one to read them. Madeira and the Canary Isles, and a number of places in England and France are suggested as localities where the proper conditions are available, but undoubtedly there are also numerous resorts on our own continent which would fulfil the same indications. The writer fitly concludes that the relaxing climates have been unduly neglected, their unattractive exteriors have obscured their inner worth and the time has seemed ripe for a plea in favor of a truer and fuller estimate of their therapeutic powers.

Ichthyol in Mycosis Fungoides.—Several remarkable cures in mycosis fungoides are reported by MENAHEM HODARA (*Monatsch. f. prakt. Dermat.*, 1904, No. 38): Ichthyol, 7½ to 15 mm., given daily for three or four months, caused almost complete disappearance of the unsightly tumors. In addition, the patient received ichthyol locally and sodium cacodylate internally. It is true that in many instances this skin disease tends to disappear spontaneously, yet in one of the cases reported the condition had continued unabated for five years, so that the cure must be ascribed to the ichthyol.

PRESCRIPTION HINTS.

Treatment of Ozena.—The prognosis of ozena is not so grave as heretofore, and the treatment instituted at the outset has a chance of cutting short the affection before atrophy of the mucous membrane sets in, and at the same time the fetid odor is removed. To succeed, two operations are necessary: remove the nasal crusts by plugs of cotton wool and wash the nasal fossæ.

M. Lyon recommends for this latter injections of a saline solution (one tablespoonful of bicarbonate of soda to the quart of tepid water or salt water [two teaspoonfuls of salt to a quart]). After several days of these injections antiseptic irrigation will be made.

℞ Acidi carbolici .....3 i
Glycerin .....3 iv
Water .....3 xvi

A tablespoonful of this mixture in a quart of water. Massei advises injection two or three times a day of a solution of resorcin (4-1,000, 5-1,000). After the injections, olive oil and menthol (1-50) are instilled into the nostrils, followed by a plug of cotton on which is a little ointment of

℞ Iodoform .....gr. xx
Peruvian balsam .....3 ss
Vaselin .....3 i

The general treatment consists in cod-liver oil in cases of scrofula, iron in anemic patients and a cure at Challes Canterets or similar sulphurous waters.

Arthritic Pharyngitis.—In the treatment of arthritic pharyngitis the acute and chronic stages must be taken into account. In the former H. Heckel advises rest in bed, sudation, hot drinks. The local treatment consists in the employment of an antiseptic ointment passed into both nostrils morning and evennig:

℞ Menthol .....gr. vi
Boric acid .....gr. xv
Vaseline .....3 i

Inhalations of

℞ Peruvian balsam.....
Proof spirit.....
.....æq. partes.

A few drops in half a glass of boiling water to be inhaled five minutes, three or four times a day.

In the chronic form sulphurous or arsenical waters should be used both internally and externally in the form of spray. Of these mineral waters the best are Saint Honoré or Challes (sulphurous), Mont-Deve, Bourboule (arsenical). In certain cases it is well to alternate, three weeks surphur, three weeks arsenic. In the trophic forms, M. Heckel recommends the application of

℞ Iodide .....gr. xv
Iodine of potassium .....3 i
Water 3 1½

The pills of Morell Mackenzie are also of service:

℞ Chlorate of potash.....3 iii
Extract of eucalyptus.....3 i
Cubebs powder .....3 ss

For one pill. Two or three before speaking or singing.

The Medical News.

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SATURDAY, APRIL 29, 1905.

PRESENT STATUS OF EPIDEMIC CEREBROSPINAL MENINGITIS.

Notwithstanding the advent of warmer weather, epidemic cerebrospinal meningitis has not thus far at least lessened its ravages to any significant degree in New York City. Altogether since October there have been nearly fifteen hundred cases of the disease in New York City, and during the last five or six weeks, the average mortality has been nearly or quite one hundred per week.

Not only has the disease been more widely epidemic than it was last year, but it has been more fatal in its effect and the general consensus of opinion expressed during the discussion on the disease at the Academy of Medicine on Thursday, April 20, was that the average mortality would be nearly twenty per cent. higher than it was last year. Another very serious feature is the fact that while those who recovered last year, as a rule recovered completely, serious sequelæ such as deafness and blindness are occurring more frequently this year and sudden deaths during the course of what looks like assured convalescence have become so common that all hospital attendants hesitate to give any expression of a favorable prognosis.

The most careful investigation has seemed to show that the diplococcus of Weichselbaum (*Diplococcus meningitidis intracellularis*), is the most important, if not the only etiological micro-organism. Some pathologists have come to have the impression that this organism may be found in the cerebrospinal fluid of those not suffering from the disease. Somehow there is the feeling that as in the case of the pneumococcus which Weichselbaum's micro-organism resembles in so many respects, the microbe may be present without actually causing the disease. Some special susceptibility of the patient is needed for the nexus of true pathological etiology.

Notwithstanding the definite acceptance on practically all sides of the causative nature of this microbe, the distribution of the disease remains as much a mystery as ever. Observations as to the spread of the disease are lacking in those elements of certainty which would indicate the method of distribution. In New York, notwithstanding all the cases that have been at the hospitals, only one medical attendant, a nurse, has been stricken by the disease and, as she had been out of the hospital several times and had done much traveling during the days preceding the attack, there seems no special reason for attributing the contagion to her work in the hospital, where she was no more exposed than so many others.

Much has been said recently of the question of some intermediate host, a parasite like the bedbug or the flea, as the carrier of the contagious material. With regard to the bedbug, its supposed rôle in the distribution of intermittent fever has been suggested as favoring the theory of its also being the carrier in this disease. There has been considerable doubt thrown on the importance of the bedbug as a distributor of intermittent fever in recent years, and so this argument fails to have the weight it would have had a decade ago. There are many aspects of the question, however, that favor this method of distribution. People who visit patients in their tenement homes seem to be likely to contract the disease, and this would account for its spread in certain quarters of the city. Hospital attendants, however, do not catch the disease, because of the absence of these carriers of the contagion and the fact that reasonable care is taken to prevent their presence.

Epidemic cerebrospinal meningitis does not occur in the tropics, however, though the *Cimex lectularius* does and the disease usually abates with warm weather in any climate to cease to be epidemic during the hot weather, though the sup-

posed host does not by any means confine his ravages to the winter months but, as many a summer boarder has found to his cost, may be particularly ravenous during the heated term. As regards fleas there is no evidence, so that while the suspicion that dogs and cats may be agents in the distribution of the disease at once suggests the thought of some parasite of these animals as the direct transferring factor we must wait for observation to throw light where conflicting theories only serve to obscure the situation.

Besides, it would seem that if infection can take place through the puncture of a cutaneous surface, then more cases of the disease will be seen among physicians than has been the case. Most of the New York patients suffering from cerebrospinal meningitis have been subjected to lumbar puncture and the removal of a certain amount of the fluid from the subarachnoid space. As this fluid usually exists in the disease under pressure, it was almost inevitable that the hands of the physician making the spinal puncture should be soiled with the fluid which in all cases has been shown to contain large numbers of the *Diplococcus meningitidis*. It would seem then that the presence of various small lesions on the fingers, so common around the finger nails, especially during the cold weather, would almost surely have given opportunities for infection. Such has not proven to be the case, however, and this would seem to argue against any infection through a small cutaneous wound.

On the other hand, the assumption that the disease is conveyed through some mucous membrane is weakened by the invariable absence of any localized process on the mucous surfaces as a symptom of the affection. For a time it was supposed that Weichselbaum's diplococcus had been found in the nose. The micro-organism found, however, has been proven to be the *Micrococcus catarrhalis*. Its relation to the Weichselbaum organism is not yet a settled matter. The question of contagion would seem to be extremely doubtful. The occurrence, however, of a certain number of cases in the same house and in the same family and especially the occurrence of eight cases of the disease in one tenement house has called attention to the danger of auxiliary conditions. The Board of Health is taking an excellent precaution and one thoroughly justified by the circumstances in requiring the disease to be reported and in insisting on isolation of the patients and disinfection of all apartments in which the disease has occurred.

With regard to the treatment of the disease very little has been accomplished, notwithstanding the immense amount of time and thought that has been given to the affection by the best physicians in the city during the past six months. As brought out at the last meeting of the Academy, diphtheria antitoxin has failed to fulfil the promise of its use in the first few cases on which it was employed. As a control, horse serum was used in a certain number of cases alongside of those treated with diphtheria antitoxin, but this also proved to be of no effect. Only symptomatic treatment seems to be of any service. The patients must be kept quiet and must be given as much morphine as will lessen their pain and prevent restlessness. Hot baths have been found excellent in making the patients more quiet and so lessening the amount of morphine necessary. Only one bit of special treatment seems promising: At the beginning of the disease, as suggested by Dr. Tilden Brown, at the last meeting of the New York Harvard Medical Society, the pus in the brain cavity is fluid. If the patient's head is kept well lifted then gravity will aid to a notable extent in relieving the pressure upon the brain itself and thus lessen one of the most serious dangers of the disease. In order to be of any service, the head must be raised from the very beginning of the disease, as after a few days the pus becomes thicker in consistency and will not flow readily. It is a startling commentary on our vaunted advance in medicine that notwithstanding the opportunities which have been so abundantly furnished for the study of the disease we have learned so little that is new about it and nothing at all that can be added to the therapeutic resources of the past.

GASTRO-ENTEROSTOMY VS. PYLOROPLASTY.

With the evolution of surgery into an exact science and the perfection of its technic operations on the stomach and intestines become more frequent and more important. Hence the world will especially welcome research reports which give further knowledge as to the physiological, that is, physical, conditions under which these hollow viscera do their complicated functions. From Boston has come already much information concerning the movements of the gut, the Roentgen rays having shown W. B. Cannon, of Harvard, more of this matter than was known before—and of a very practical nature. More recently this promising specializer has been working with a practical surgeon, J. B. Blake, and their com-

bined observations and experiments have produced some results practical and perhaps important to enteric surgeons.

It has appeared already from the physiological work of Cannon that the shape of the stomach when empty of food is very different from that form with a small upper curvature and a large rounded convexity below with which the text-books have made us so familiar. It is now more than likely that the vacant stomach is shaped much like a man's riding-boot, suspended between two relatively fixed points, the cardia and the pylorus. If this is true, it is obvious that the point supposed to be the lowest in the stomach on the old ideas of the viscus's shape is not really so at all times, but rather to the left of the spot from which the gastric contents would most readily pass when the stomach is nearly empty.

Many surgeons have over and over seen their operations of gastro-enterostomy made worse than useless in cases of partial pyloric stenosis by a vicious circulation of part of the chyme. That little food which could be forced out at the pylorus went no further down the gut than the artificial opening into the stomach, but then passed into the stomach again, decomposed and gave rise to the distress so common after this attempt at surgical cure. The reason for this, Cannon and Blake found to be in the sharp occluding bend in the intestine usually found just beyond the opening into the stomach,—a condition difficult to avoid for the following supposed reason: In making the fistula, some centimeters of the circular muscular fibers of the gut are severed and this prevents the occurrence of normal peristalsis at the point beyond the opening and the consequent extension of the intestine into a normal curve longitudinally obtaining in the uninjured tube. Normal peristalsis has been shown to be a two-fold process, a double slow wave of constriction accompanied by dilation, the progression, according to Magnus, being dependent on the integrity of Auerbach's plexus governing the circular fibers of muscle. In the absence of the normal peristalsis there is nothing to prevent the persistence of sharp occluding angles in the multifold intestines.

The practical application of these facts and suppositions, based on numerous studies on the brutes, is almost obvious. Gastro-enterostomy is an uncertain operation because, first, of the difficulty of locating the proper point for the opening between the gut and the stomach, and second, because of the danger that occlusion of the intestine by bending will occasion the vicious circle of chyme already described. On the other hand, as was found by actual experiments, the gastric mechanism tends to force the contents out through even a small opening at the pylorus and rarely only through a large orifice artificially made in the stomach's wall. Therefore in general, this research substantially recommends the abandonment of gastro-enterostomy and the general adoption of pyloroplasty in its stead. Follow the lead of nature, says the work, and make it possible for the stomach to empty itself where its movements practically compel all contained matter to be extruded. Sometimes resection will be necessary and often one of the several operations for enlarging an opening not occluded but only stenosed. At any rate, by making it possible for the stomach to empty itself by its normal outlet the food will be started toward digestion in the duodenum and jejunum without the possibility of the occurrence of the ills so common after gastro-enterostomy. But in case the latter operation is found advisable, make the opening far to the operator's left and very large, and sew the intestines for some centimeters along the wall of the stomach to the right of the opening in order that normal peristalsis be not disturbed.

By researches like this, abdominal surgery is rapidly becoming an art full of hope and satisfaction to the world—a new art, but surely a blessed one already.

THE SIGNIFICANCE OF RHYTHM IN VITAL PHENOMENA.

RHYTHM displays itself in so many widely different physiological processes, that an investigation of its origin and meaning can be fraught with no little interest. An enumeration of the vital processes in which rhythmic variations occur, begins with the very basal phenomena of life and ends with the highly refined psychic activities.

In the unicellular organisms, rhythm must be recognized as an innate property of protoplasm. The regular pulsations of the contractile vacuoles of the *Paramecium*, is a case in point. In the highest of all organisms, man, the grosser manifestations of rhythm are seen in the beating of the heart, the movements of respiration, the waving of the cilia of the respiratory passages, the spontaneous and regular contraction of the arteries, the contractions of the kidneys and uterus, and the rhythmic variations in muscular tone. The subtler examples of this ebb and flow of life are

seen in the psychic activities. The alternation of sleep and waking—that regular daily spontaneous transition from consciousness, with all the accompanying physical powers in full swing, to unconsciousness, with its accompanying lowering of the physical tone, is the most apparent and striking manifestation of mental rhythm. Recently, Fano has described minor rhythmic variations in the nervous system, more particularly in the reflex centers of the spinal cord.

What is the significance of physiological rhythm? As regards its purpose in certain functions of the body, there can be no doubt that it plays an indispensable rôle. Thus, in the case of the heart-beat, the regular alternation of work and rest is an adaptation to the needs of an efficient circulation. Likewise the rhythmic contractions of the respiratory muscles are a purposeful adaptation for securing oxygenation of the blood. On the other hand, when it comes to explain the origin of rhythm, one encounters a subject that is enshrouded in mystery. To say that the regular contractions of the cardiac and respiratory muscles are the result of automatic impulses emanating from the vital centers in the medulla oblongata, is no explanation, and merely transfers the difficulty one step backward. The attention is then riveted on the nerve-centers and the question occurs, how are these automatic impulses initiated? Physiology has hitherto pointed to the blood as affording the stimulus which sets into activity the machinery of the respiratory center. Mosso has recently shown that carbon dioxide is the real stimulus of the respiratory center, for by fixing the carbon dioxide by means of injections of caustic soda into the blood, the respiratory movements cease. It seems unnecessary, however, in the light of the interesting researches just reported by Pari, to seek the cause of automatic phenomena outside of the nerve-centers in which they originate.

Rhythm is a fundamental attribute of protoplasm, and is closely correlated with the process of metabolism. It is necessary to recall Hering's definition of life as the resultant of two opposite forces, anabolism and catabolism, to understand how, by the alternate predominance of one or the other of these processes of repair and waste, the resulting vital manifestations necessarily assume a rhythmic character. It is upon this hypothesis that Pari explains the rhythmic oscillations which have already been observed by Fano in the reflex centers of the spinal cord.

According to this hypothesis, which is an appealing one, life must be regarded as a discontinuous process, or at least as a process having alternating phases of maximal and minimal intensity. It would be graphically represented by a wavy line. The crests of the waves correspond to the highest nutritional states of the protoplasm, while the depressions between the waves correspond to the exhaustion of the living matter.

The above discussion may help to elucidate the highly important discovery by Pari that it is possible to change at will the rate of the rhythmic variations in the nerve-centers. By varying the rapidity of the stimuli applied successively to the afferent spinal nerves, the reflex centers, besides producing the customary muscular contractions, betray an oscillation in their excitability which is synchronous with the rate of stimulation. The intervals between the oscillations are exactly double the intervals between the stimuli.

The nerve-centers may be compared to a watch whose works may be made to go fast or slow by means of a small lever. The regular rise and fall in the energy of the nerve-cells may be quickened or slowed, by increasing or decreasing the rapidity of the stimuli. In this susceptibility of the coordinating cells of the body to synchronous variations, is to be seen one of the most interesting and useful adaptive capacities of the organism. The heart depends for the rate of its rhythm upon the impulses descending along the vagus and the accelerator nerves. That is, the heart-muscle which has an innate power to contract rhythmically independently of the nervous system, may have the tempo of its rhythm varied according to the nature of the stimuli affecting it from without. What is true of the heart is true also of the organism as a whole.

Pari defines habit as an expression of the fact that the bodily rhythms have been adjusted to the mode of stimulation. The reason why the lull in the vital forces, whose manifestation in the nervous system results in sleep, occurs every day at the same time, is because the body, and more particularly the nervous system, has adjusted itself to the habits of the individual. As a proof of this is the fact that one may reverse this alternation of sleep and waking at will, as seen in the case of people who are obliged to sleep during the day. It has been observed that the diurnal variations in the bodily temperature also suffer a similar reversal.

May not the periodic return of the menstrual flow have some connection with the changes of

the moon? There can be no doubt that astronomical and meteorological conditions have been important factors in fixing the habits of the race in the past. That the sexual crisis in the female is accompanied by a similar rhythmical excitation of the forces of the body as a whole was pointed out a number of years ago by Mary Putnam Jacobi. It is probable also that males exhibit a monthly variation of the metabolic and sexual functions.

In the moral sphere rhythm is also evident. Sociologists have probed into the statistics of crime, suicide, etc., and have discovered a periodic variation. A college president recently alluded to the fact that most crimes occur on Saturdays, and explained this on the hypothesis that the end of the week finds the individual fatigued, with his moral and mental resistance at lowest ebb. This illustration at least harmonizes with the view that mental rhythms are the play of external forces.

Since rhythm is one of the natural phenomena of physiology, one would expect to find it also in abnormal physiology or pathology. This is actually the case. Jacques Loeb was able to produce spontaneous rhythmic contractions of skeletal muscles by disturbing the chemical equilibrium of inorganic salts in the fluid bathing the muscle-fibers. The disturbances of the heat-regulating apparatus produced by parasitic invasion of the organism, as seen in tuberculosis, malaria, relapsing fever, etc., assume a rhythmic character. The annual return of hay fever on exactly the same day and at exactly the same hour as it has been wont to appear in the past, the periodic phenomena of circular insanity, the dancing manias of the Middle Ages, may be cited as a few of the numerous examples of rhythms in neuropathology.

The most interesting characteristic of the rhythmic oscillations of the nerve-cells is that they are susceptible of being influenced by rhythmic phenomena of the outer world. Auditory stimuli are effective in this direction, as seen in the wonderful power which martial music has over the minds of men. One instinctively adjusts the pace to the tempo of the music. If the latter has such a certain power over the healthy mind, making the mental chords vibrate in unison with its own, can one deny that it may have a similar power over the abnormal mind? This opens up a suggestive chapter on the possible uses of music in mental therapeutics.

Experts on physical culture have already realized the importance of rhythm in physical education, and the dance has established itself as a necessary feature of the gymnasium course. This is a concession to the view that muscular development is not the sole consideration of physical education, but that the harmonious development of the nervous system is an equally, if not a more, important matter. One thing is certain: Whatever will tend to quiet the intense nervous restlessness of the American people, to diminish the speed at which life is being run, will succeed in reducing the number of those, who, from the standpoint of their nervous energy, become bankrupt. That rhythmic habits, exercises, music, if you will, may to a certain extent be of value in this direction, there can be little doubt.

ECHOES AND NEWS.

NEW YORK.

Hospital Appointments.—The following is the list from the College of Physicians and Surgeons for the past week: *General Memorial*, R. Hutchinson. *Bellevue* (P. and S. division), first, D. White, E. B. Armstrong, Gorgon Lindsay, C. T. Harbeck, M. E. Lewis. *Bushwick Avenue, Brooklyn*, H. M. Friedman. *French*, M. E. Smith, C. Krunwiede, L. F. Meloney. *St. Francis*, C. I. Prescott, W. W. St. John, C. F. Kurpick. *King's County, Brooklyn*, F. B. Hart. *Hudson Street*, first, G. A. Merrill, C. T. Leslie, M. D. Bryant. *Englewood, N. J.*, P. E. Brundage. *Williamsburg, Brooklyn*, first, T. C. McCoy; Alternate, L. L. Wertheim. *St. Mary's, Brooklyn*, first, E. J. Cronin, L. A. Parker. *St. John's, Yonkers*, first, H. H. Stevens, H. E. Ricketts.

Otology.—A Course for the Training of Specialists.—For matriculates desiring to become specialists, a personal course is now being given on the anatomy of the ear (sections to be made by matriculates), the physiology and the pathological-anatomy, at the Post-Graduate Medical School and Hospital. Also personal instruction and practice in the use of aural forks and other instruments; the diagnosis and treatment of aural diseases and the minor operative procedures. The course is under the direction of Drs. Bryant and Kopetzky, and covers a period of six months, daily instruction. The fee for the entire course is $200. The matriculate can join the class at any time. Major operative surgery to be elective and under the direction of Dr. Held. Further particulars to be had on application.

Cornell University Medical College.—The following additional hospital appointments have been obtained by the Graduating Class of Cornell University Medical College: *Presbyterian Hospital*, Robert LeRoy Hutton, Alvin W. Baird, Charles Hartwell Cocke. *New York Hospital*, first, Otto Louis Goehle, Rollin Hills. *Bellevue Hospital*, Second Division, first, Albert N. Benedict, John Rutherford Herrick, Earle W. Phillips, John Homer Cudmore, Horace Westlake Frink, William Murray Kerr. *Fordham Hospital*, first, William Hinz. *Paterson General Hospital*, Richard Sandford Mallon. *St. John's Hospital, Brooklyn*, first, Robert Rhoode Patterson. *St. Catherine's Hospital, Brooklyn*, first, Charles A. Gordon, J. L. De Varona. *Woman's Hospital and Infant's Home, Detriot, Mich.*, Z. M. Clark. *St. Mary's Hospital, Jamaica*, first, John Joseph

McGlade. *St. Vincent's Hospital, Staten Island,* first Charles W. Murset. *Sydenham Hospital,* first, Morris James Klein. *St. Mary's Hospital, Brooklyn,* James Francis Coyle. *St. Joseph's Hospital, Yonkers,* John Francis Gannon. *St. Michael's Hospital, Newark,* Ernest March Poate.

Cerebrospinal Meningitis.—Coincident with the appointment by the Department of Health of a commission of eminent physicians for the investigation of cerebrospinal meningitis, a corps of medical inspectors, five in number, was organized and assigned to the sanitary supervision of the disease in the Borough of Manhattan. These physicians attend to the isolation and quarantine of patients at their homes, order the necessary disinfection of premises and bedding in cases which have recovered, died or been removed to a hospital, and report as to the sanitary condition of the premises and any violation of the Sanitary Code. They have had the opportunity of observing a large number of cases of the disease, and their services are at the disposal of any physician who may wish assistance in diagnosis of suspected cases of cerebrospinal meningitis. A physician trained in such work, has been assigned to the performance of lumbar puncture in cases of cerebrospinal meningitis at the request of the attending physician. The Department of Health advises that lumbar puncture be done in all cases where practical; both as an aid to diagnosis, and in order to obtain material for bacteriological study and consequent advancement in our knowledge of the disease. Requests for the services of a physician for diagnosis, disinfection, or lumbar puncture should be made direct to the Department of Health, Fifty-fifth Street and Sixth Avenue (Telephone, 1204 Columbus), where they will receive prompt attention.

Hospital Fund Allotted.—Sums aggregating $76,000 will be distributed at once among various hospitals of the city as the result of an apportionment made last week by the Distributing Committee of the Hospital Saturday and Sunday Association. The committee met in the Mayor's office at City Hall, with Mayor McClellan and Postmaster Wilcox present as ex-officio members, besides Morris K. Jesup, James Speyer, John Claflin, and James C. Fargo. The $76,000 was apportioned as follows: Montefiore Home and Hospital, $7,600.00; Mount Sinai Hospital, $5,059.21; St. Luke's Hospital, $4,370.24; German Hospital, $4,397,80; Roosevelt Hospital, $3,941.31; Nursery and Children's Hospital, $3,879.44; Lebanon Hospital, $3,682.05; Lincoln Hospital and Home, $3,654.30; Ruptured and Crippled Hospital, $3,569.32; Post-Graduate Hospital, $3,036.55; New York Infants' Asylum, $2,861.84; St. Mary's Free Hospital for Children, $2,512.03; Home for Incurables, $2,310.94; Sloane Maternity Hospital, $2,038.07; Isabella Heimath, $1,876.81; Hospital of the Lying-In Society, $1,830.70; Home of the Sisters of Miserecordia, $1,825.40; French Hospital, $1,824.39; Beth Israel Hospital, $1,696.05; Orthopedic Dispensary and Hospital, $1,529.83; House of the Holy Comforter, $1,159.02; Homeopathic College and Hospital, $1,031.70; New York Eye and Ear Infirmary, $997.58; Babies' Hospital, $976.93; House of Rest for Consumptives, $857.40; New York Ophthalmic Hospital, $812.64; St. Mark's Hospital, $811.08; New York Polyclinic Hospital, $793.80; Manhattan Eye and Ear Hospital, $751.65; J. Hood Wright Memorial Hospital, $746.71; New York Skin and Cancer Hospital, $741.79; New York Infirmary for Women and Children, $667.76; General Memorial Hospital, $573.75; Hahnemann Hospital, $514,25; St. Andrew's Convalescent Hospital, $316.65; New York Medical College and Hospital for Women, $250.00; New York Home for Convalescents, $250.00; New York Ophthalmic and Aural Institute, $250.00. The apportionment is based on the free work performed by the various institutions during the past year.

PHILADELPHIA.

Donation Day at the Orthopedic Hospital.—One of the days last week was set apart to receive donations at the Orthopedic Hospital.

Typhoid and Meningitis Increasing.—During the last week 149 new cases of typhoid fever were reported to the Board of Health. Although the chief seat of the disease is in the Twenty-fifth, Thirty-first and Thirty-third Wards, many cases were reported from all over the city. Nine cases of cerebrospinal meningitis were reported also.

Resigned from the Board of Examiners.—Because of the wish expressed by Director Martin to have the Civil Service Examining Board free from members connected with medical schools, Dr. Joseph McFarland handed in his resignation. There were 125 applicants at the examination which was held in the city hall Thursday, April 20, for resident physicians to serve in the Philadelphia Hospital.

Bullet Removed from Spinal Canal.—Albert Tripp, a medical student, of Ann Arbor University, Mich., who for two years has been carrying a bullet in his spinal canal had it removed at the Pennsylvania Hospital last week. The operation was performed by Dr. Francis Stewart, who several years ago operated successfully upon a fracture of the spinal column in the same hospital. Tripp has apparently recovered from some of the paralysis incident to the lodgment of the bullet.

An Attempt to Recover Damages for Operating Upon a Patient Without the Consent of the Parent.—William Hibbert brought suit against Dr. D. P. Maddux, physician to the J. Lewis Crozer Hospital, Chester, Pa., to recover $20,000 damages for an operation upon his daughter without consent. Dr. William Van Lennep, Dr. Joseph Price, and Dr. Theodore L. Chase, all testified that Dr. Maddux did right in performing the operation. The jury disagreed and the case will be brought up again at the next term of court.

Talks to Glass Blowers' Union on Tuberculosis.—In presenting this subject to the union Dr. George W. Norris informed his hearers that in every year 2,800 people die of this disease in Philadelphia alone, while 4,000 die in Pennsylvania and 100,000 die in the United States every year. Taking the whole world into consideration two people die every minute. He also told them that lack of light is the most important predisposing cause, therefore the disease is seen most frequently in weavers, glassblowers, cigarmakers, printers, sweat-shop workers, bartenders and millworkers.

Dr. Osler on "Student Life."—In his talk before the members of the Stillé Medical Society, Dr. Osler said "the student is a lover courting a mistress who is ever seeking to elude his grasp." He also told his hearers that the student finds it too easy to stray away, and it is for that reason that we have the dilettante and the adventurer who delves into knowledge at his pleasure. Men will not take the time to get to the heart of a matter. There were present on the stage, Dr. James McAlister, president of the Drexel Institute; Dr. DeForrest Willard, Dr. J. William White, Dr. John H. Musser, Dr. R. Tait Mackenzie, Prof. Alvin Smith, Dr. Alfred Stengel, Mr. Nelson W. Janney.

Conference of Medical Men Before the Governor.—The bill passed by the State Legislature creating a Board of Examiners for osteopathic physicians has

aroused the medical societies; the County Medical Society has appointed several physicians to confer with the Governor and last week he met them to consider the bill pro and con. Dr. Henry Beates, president of the State Board of Examiners, Dr. L. Webster Fox, of the Medico-Chirurgical, and brother of the author of the bill, and Dr. Alfred Stengel, of the University of Pennsylvania, spoke against the bill, while Dr. Mason W. Pressler spoke for it. The Governor has not as yet intimated what he will do in regard to the matter.

Section on Ophthalmology of the College of Physicians.—This meeting was held April 18. The scientific program was opened by Dr. Charles K. Mills, who read a paper entitled "Subdivisions of the Visual Cortex, with Remarks on Cortical Color Representation." Dr. Wm. Posey read a paper on "Conjunctivitis Excited by Contact with Horses." Dr. Lewis Ziegler read the next paper on "Bilateral Lymphomata of the Lacrimal, Parotid and Submaxillary Glands, due to Tonsillar Hypertrophy and Consequent Suboxidation." Dr. Howard F. Hansel read a paper entitled "Some Lesions of High Myopia, Clinically Considered." Dr. E. A. Shumway exhibited "A Case of Perforating Wound of the Cornea and Iris Without Injury to the Lens."

Medical Jurisprudence Society.—The meeting of this society was held April 17. Dr. Hendrie Lloyd read a paper entitled "The Need of an Asylum for the Criminal Insane in Pennsylvania." During the course of the paper he informed the society that the criminal insane and the insane convicts should not be allowed to associate with the innocent insane nor should the first named class be treated in the same hospital. The insane convicts require and should be given the same prison discipline as that of the penitentiaries. He maintained that there are enough criminal insane in the asylums, almshouses and penitentiaries throughout the State to warrant the establishment of a separate asylum for their care and treatment. The paper was discussed by John A. Clarke, Dr. W. W. Hawke, physician in charge of the insane department of the Philadelphia Hospital; Dr. W. D. Robinson and Dr. Phillips, of the Eastern Penitentiary. The following officers were elected: President, Dr. H. W. Catell; vice-presidents, Adolph Eichholz and Dr. W. M. L. Coplin; secretary, Dr. Henry Leffmann; treasurer, Paschall H. Coggins.

CHICAGO.

Appointment of Dr. Croftan.—Dr. Alfred C. Croftan has been appointed attending physician to St. Elizabeth's Hospital.

Emergency Hospital Incorporated.—The Chicago Emergency Hospital was recently incorporated with a capital stock of $25,000, by Dr. Richard M. Fletcher, Anna Fletcher, and W. M. Ford.

State of Chicago's Health.—At the close of ten years' service as Commissioner of Health, in the Bulletin of the Health Department for April 15, certain data were presented showing the decreasing mortality of Chicago. These data are set forth in full in the annual report of the Department for the year 1904, now in press.

Present Status of a Sanatorium for Tuberculosis in Illinois.—The bill providing for the erection of a State sanatorium for persons afflicted with tuberculosis, known as the Glacken bill, has been favorably recommended by the House Committee on Appropriations. The appropriation, however, has been reduced from $200,000 to $50,000.

Sewage Disposal.—The State Board of Health contemplates making an investigation into the methods of sewage disposal in smaller cities of the State, with a view to remedying faulty conditions which may exist. These investigations will cover the various septic tanks in use to determine the degree of purification secured, and to what extent this method of purification may be recommended.

American Association of Pathologists and Bacteriologists.—The fifth annual meeting of this association was held at the University of Chicago, April 20 and 21. There were about 150 members in attendance. The sessions were held at the Reynolds Club and the Hull Biological Laboratory. The following officers were elected for the ensuing year: President, Dr. James Ewing, New York; Vice-President, Dr. A. S. Warthin, Ann Arbor, Mich.; Secretary, Dr. H. C. Emit, Boston; Treasurer, Dr. N. Hugh Williams, Buffalo, Member of the National Council, Dr. F. D. Mallory, Boston. The association held a banquet at the Chicago Athletic Club.

CANADA.

Tuberculosis Disinfection in Montreal.—The Tuberculosis League of Montreal have decided to disinfect residences and enable people to comply with the law at a nominal cost. They will bring to the notice of the public, especially every spring time, when so many people are moving, the advisability of disinfection after tuberculosis. By a by-law of the Montreal City Council, the duty is imposed upon the proprietor of every house when it becomes vacant of having it thoroughly disinfected and put in a sanitary condition before it is let again to another tenant. An effort will be made to see that this by-law is complied with on the part of property owners.

Dr. Wilfrid T. Grenfell in Toronto.—Dr. Wilfrid T. Grenfell, who is described as the comfort and hope of a whole people and the hero of the Labrador Coast, has been in Toronto during the past week and lectured before the Canadian Club. He is on his annual tour of leading cities of the United States and Canada, interesting philanthropists in his mission among the fisherfolk of Newfoundland and Labrador. Dr. Grenfell is a graduate of medicine of the University of Oxford and for thirteen years has been ministering to the spiritual and medical wants of a constituency of 2,000 miles in extent. Probably no other English-speaking doctor ever made such extensive trips to minister to the sufferings and illnesses of a community as does Dr. Grenfell. He has had erected in a primitive way three hospitals and Lord Strathcona has supplied him with a ship, with which, when the waters are navigable, he plies the coast line. For a patient to have an ear frozen while in a hospital, seems a very strange thing to most of us, but this actually occurred last winter in one of Dr. Grenfell's hospitals. Every year 2,000 people are attended to by himself and his assistants; and this year he has been successful in persuading two specialists to spend the summer with him.

Annual Report, Samaritan Women's Hospital, Montreal.—The Samaritan Hospital for Women, Montreal, held its eleventh annual meeting last week, and the report, submitted by the surgeon-in-chief, Dr. Lapthorn Smith, stated that during 1904 there had been admitted to this institution 146 women, 28 of whom had received medical treatment, and 118 of whom had undergone surgical operations. Out of fifty major operations there was but one death, thus disclosing a very low death rate. Reference was made in the report to the very serious illness of Dr. F. W. Campbell, a member of the consulting staff, who is also the Dean of the Medical Faculty of Bishop's College University.

Dr. S. F. Wilson was added to the consulting staff. Speaking of the nursing staff, Dr. Smith stated that one of the crying needs of the times was a nurse who could be got at a dollar to a dollar and a half a day. Dr. Smith also referred to the absolute need of a new hospital building and hoped that some philanthropist would come forward and build a new Samaritan Hospital. Continuing, Dr. Smith said that there were two things about the work of the Samaritan Hospital that could not be too widely known: First, that it is not a maternity hospital; and second, that the Samaritan only takes in married women or girls, whose characters are above reproach, and who require gynecological treatment. It is not a rescue home nor a lying-in hospital, and the character of all patients must be vouched for by physician and a clergyman.

GENERAL.

Meeting of Medico-Psychologists.—The sixty-first session of the American Medico-Psychological Association, at San Antonio, Texas, closed April 20, after choosing St. Paul for the next meeting place. The papers and discussions hinged about the proposal to prevent the spread of insanity by legislation. Dr. H. W. Miller, of Taunton, Mass., drew the conclusion that the States should control the marriage of persons afflicted with mental maladies. Dr. C. G. Hill, of Baltimore, took a contrary view. The tendency of heredity is always to the better, he said.

Cerebrospinal Meningitis.—The epidemic of cerebrospinal meningitis which has been in progress in Prussian Silesia since about the end of last October, is reported to have spread over the frontier into Austrian Galicia. In response to a question on the subject in the Prussian Landtag last week the Minister for Public Instruction, Religion and Medical Matters, stated that in some of the affected districts there had been a large number of cases with a heavy mortality, but there was no great cause for alarm. Such measures as were possible were in operation.

Health of Canal Zone.—Secretary Taft has received the report of Col. Gorgas, in charge of the sanitation of the Canal Zone, for the month of March, from Gov. Davis, by cable, as follows: "Gorgas's health report for March shows steady improvement. End of March employees were about 9,000; sick in hospitals, 153; total deaths, 11. Equals rate 14 per 1,000; favorable anywhere. In the last thirty days to date four cases yellow fever throughout the whole Isthmus, of which one was in Panama. In previous thirty days twelve cases. Each house in Panama has been fumigated; a great many, several times."

Proprietary Medicines in Cuba.—Several deaths having recently occurred in Cuba as the consequence of an overdose of one or another proprietary medicine, the Cuban Government revived an old Spanish law requiring that the formula of every nostrum should be printed on the label of the bottle in which it is sold. Manufacturers of American medicines, foreseeing the loss of the secrecy, which is the most potent ingredient in their products, brought all available influence to bear on the Cuban Government, which gave way to the extent of conceding that the formula of every proprietary medicine should be filed with the Cuban Government, which undertook to keep it secret. If the formula shows cause for belief that the remedy is dangerous, its sale will be hedged about with suitable restrictions.

American Medical Association.—Itinerary of personally conducted special train to and from the annual meeting of the American Medical Association, to be held at Portland, Oregon, July 10 to 14, 1905, visiting Chicago, St. Paul, Minneapolis, Lake Minnetonka, Yellowstone Park, Butte, North Yakima, Tacoma, Seattle, Portland, Columbia River, San Francisco, Mt. Tamalpais, Monterey, Santa Barbara, Los Angeles, Santa Catalina Island, Mt. Lowe, Riverside, Redlands, Lucky Baldwin's Range, Salt Lake City, Salt Air, Royal Gorge, Glenwood Springs, Manitou, Pike's Peak, Cripple Creek, Garden of the Gods, Denver, Georgetown Loop, Kansas City, St. Louis, Niagara Falls. Train leaves June 24, returning about August 3, with stop-over privileges at Niagara Falls. For full particulars apply to Dr. Frederick Holme Wiggin, 55 West Thirty-sixth Street, New York City.

Central Wisconsin Medical Society.—The third quarterly meeting of this society was held in the City Hall in Beloit, Tuesday, April 25, 1905. The following papers were read: "Rational Anatomy and its Relation to Surgery," by Dr. C. H. Clarke, of Shopiere; "Professional Ethics," by Dr. D. R. Connell of Beloit; L. F. Bennett, Beloit, and J. F. Pember, Janesville; "Some Phases of Gall-Stone Disease, and its Surgical Treatment," by Dr. Albert I. Bouffieur, Chicago; "Lacerated Perineum. When shall we repair it? With conclusions drawn from ten cases," by Dr. C. C. Gratiot, Schullsburg; Paper, "Inversion of the Uterus, with report of case," by Dr. P. L. Markley, of Rockford, Ill.; "Iritis," by Dr. C. R. Treat, of Sharon; "Recent Views Regarding Appendicitis," by Dr. J. A. Jackson, of Madison; "Cerebrospinal Meningitis," by Dr. G. W. Fifield, of Janesville; "Otitis Media Acuta," by Dr. F. T. Nye, of Beloit; "Radical Cure of Hernia," by Dr. George Keenan, of Madison; "Some Features in Conduct of Normal Labor," by Dr. C. S. Sheldon, of Madison.

American Medical Association.—The following letter has been received from Dr. Kenneth J. Mackenzie, Chairman, Committee on Arrangements of the American Medical Association: "We are planning several trips at the present time, and we are contemplating giving the association a nice trip on the Colorado River to enable them to see the best part of the scenery. We may have also an excursion to Alaska and expect to be able to charter a steamer, which will leave at a convenient date following the meeting of the American Medical Association. The regular excursion rates are $100 from Seattle or Tacoma and return. We have arranged a special rate of $70 for our trip. The steamer will stop at all southeastern Alaska points, including Katchikan, Wrangel, Douglas Island, Treadwell, Juneau, Skagway and Sitka. This trip will consume about twelve days, and is the finest trip that we can offer, and it is one of the finest in the world. We have also made arrangements with the Pacific Mail Steamship Company, and they have placed at our disposal accommodations for fifty excursions on the Korea, which sails from San Francisco on July 22. The rate from San Francisco to Honolulu and return will be $110; from San Francisco to Yokohama and return $240; from San Francisco to Hongkong and return $270. The regular rate to Hongkong being $347. We are also planning to give the members of the association a side trip to the coast from Portland, which will enable them to see a Pacific Ocean seaside resort, with a run of at least one hundred miles on the Columbia by rail or boat. The meeting promises to be well attended and to be a most successful one."

The Health of Seven Millions.—Gov. Pennypacker, of Pennsylvania, would assume a grave responsibility if he should in any way discourage the effort to provide that State with a better system for the safeguarding of the public health, writes the New York

Times. Recent experiences with typhoid epidemics emphasize the need of a State Board of Health with such powers as shall enable it to interpose between communities and the kind of negligence which menaces life and health. Pennsylvania needs much better protection than is now offered for the streams which are the dependence of its cities and towns for the water supply, and also a better method of collecting and tabulating vital statistics for the information of the public as to what causes are operative to swell the death rate. What effort there now is to look after the health of communities is hampered by the lack of anything like coordination, with the result that in too many instances the dangers escaped by one community are unloaded upon another. The various units of local sanitary administration work at cross purposes and with little or no regard to the welfare of the Commonwealth. This will not be corrected merely by the passage of bills designed to supply the deficiencies of the system. A great deal more depends upon the character of the citizens chosen to organize and manage the work of the State Board of Health and upon the measure of support given them by the Governor. We agree with the *Philadelphia Press* that "it is a hideous travesty of the administrative responsibilities of a great Commonwealth that the care of fish and birds, the protection of animals and forests have a larger place in the budget, more comprehensive powers on its statute book, and a more efficient organization than the sanitary care of 7,000,000 human beings." This is strong language, but it is fully warranted by the facts. Pennsylvania has been distinctly negligent in this matter, and it is not to her credit that the ravages of typhoid fever and smallpox have not created a public sentiment strong enough to compel attention at Harrisburg.

Russian Medical Items.—The assistant-professors, prosecutors, clinical assistants, *et al,* of the Women's Medical Institute at St. Petersburg, have forwarded the following resolution to the faculty of the same: "In view of the abnormal conditions surrounding the social and academic life in Russia, and the impossibility of continuing our work quietly and conscientiously, we are hereby compelled to tender our resignations until more favorable conditions are guaranteed us."

The senior (fifth year) students of the medical department of the Odessa University, have unanimously refused to present themselves for the State (licentiate) examinations, as a protest against the high-handed methods of the irresponsible bureaucracy, and as voicing their sympathy with the general current of the reform movement that is rapidly spreading all over the land. A similar action was adopted by the students of the Charkow University.

At a meeting of the Society of Normal and Pathological Psychology, presided over by Prof. Bechterew, resolutions were adopted expressing sympathy with the scientists who protested against the cruelties of the government in quelling the student disturbances, it being also decided to disband the society temporarily as a demonstrative protest against the government. The meeting of the Pirogoff Medical Society which took place at Moscow March 21 (old style) will certainly be remembered as one of momentous importance in the history of the New Russia. The Minister of the Interior was informed a month ahead of the proposed gathering, for which permission was then sought, the principal object under discussion being the ways and means whereby to check the possible spread of that dread calamity, the cholera; at the present troublous state of affairs all over the country the epidemic threatens to assume truly horrible proportions. At the eleventh hour, when over a thousand delegates representing numerous provincial sanitary bodies were gathered, this number growing larger by the unceasing arrival of others, the Minister withdrew his permission. But it was too late, the convention opened its deliberations "unofficially," its first act, by way of a demonstrative protest, being the election to the chairmanship of of two physicians, Yelpatievsky and Chinokayeff, who only recently returned from exile, whither they were banished for entertaining "unreliable" political views. Unable to prohibit the gathering the Minister of the Interior could not but permit it. In the course of the discussions, views hardly complimentary to the present régime were openly exchanged (a procedure unheard of in Russia), and resolutions of a most outspoken character were adopted, the gist of which was to the effect that instead of assisting the physicians in intelligently combating the spread of the calamity the government systematically foster suspicion and hatred on the peasants toward the physicians; this hatred in very tangibly expressed in the so-called cholera riots so that the very lives of the physician or nurse who devotes himself to saving the poor wretches is never safe.

The "divide et impera" policy of the autocracy might suffer considerably if a bond of sympathy were to spring up between the "intellectuals" and the common people.

Status of the "Osteopathic," "Optometry," "Anti-Vivisection" and "Medical" Bills Pending in Illinois.—The State Board of Health through its President and Secretary, has opposed and still opposes each and every one of these bills. The majority are inimical to the rights and privileges of the licensed physicians and surgeons of Illinois, who have complied with the laws of the State, and it would appear that the public health, safety and welfare demand the non-enactment of several. It is respectfully recommended that the members of the medical profession express their views in writing to their representatives, addressing them at Springfield.

The bills opposed contain the following features: (*a*) Gives to osteopaths practically all rights and privileges of licensed physicians and surgeons; permits them to practice surgery, obstetrics, and to prescribe certain drugs and medicines. (*b*) Licenses persons to measure vision and fit lenses by any means other than the use of drugs; licenses without examination those now engaged in this practice, the State certifying, by inference, to their qualifications. The State Board of Health questions the constitutionality of this bill. (*c*) Restricts operations upon human beings and experiments upon animals by many technicalities seemingly impossible to overcome. Certain sections semilar to those in Gallinger Bill, defeated in U. S. Senate in 1899. (*d*) Places an osteopath on the State Board of Health, reduces representation of the regular school on the Board from five to three members; provides that no person financially interested in a medical college or university having a medical department shall serve on Board. (*e*) Reorganizes State Board of Health, takes from Board right to determine "good standing" of medical colleges; gives osteopaths right to prescribe certain drugs and medicines and to practise surgery and obstetrics; gives no osteopaths now practising physicians' certificates without examination. (*f*) Amends medical practice act; licenses graduates of legally chartered medical colleges without examination and makes the law apply only to those who treat by the administration of drugs or by the use of surgical instruments. (*g*) Practically the same as House Bill 228. [See

note] (*d*). (*h*) Repeals medical practice act; regulates medical and osteopathic practice; takes from State Board of Health the right to determine "good standing" of medical colleges; provides for an osteopath on the Board; licenses graduates of legally chartered medical colleges without examination; permits osteopaths to take the regular examination of the Board, the examination in materia medica to be conducted by the osteopathic member of the Board; gives osteopaths the right to practice surgery and the right to prescribe certain drugs; grants physicians' certificates without examination to osteopaths now practising; makes the section of the act concerning itinerant vending of drugs not to apply to the sale of "standard proprietary preparations."

Nebraska State Medical Association.—The thirty-seventh annual meeting will be held in Paddock Hotel, Beatrice, Tuesday, Wednesday and Thursday, May 2, 3 and 4, 1905. The following program has beeen arranged: "Oration on Medicine—He's Only a Doctor," by Dr. P. E. Plumb, of Gothenburg; "Oration on Surgery—Surgical Enthusiasm. Is it Declining?" by Dr. S. C. Beede, of David City; "Oration on Obstetrics and Gynecology—Ideals," by Dr. M. L. Hildreth, of Lyons; "A Plea for Surgical Intervention in Suspected Malignant Disease of the Abdominal Caviey," by Dr. B. B. Davis, of Omaha; "Proper Management of Labor by the Country Doctor," by Dr. A. E. Cook, of Randolph; "Obstetric Forceps," by Dr. Andrew B. Somers, of Omaha; "The Choice of Operations for the Restoration of the Pelvic Floor," by Dr. J. W. Bullard, of Pawnee City; "Chronic Metritis," by Dr. Edwin Brown, of Omaha; "Conservatism in Gynecology," by Dr. A. B. Anderson, of Pawnee City; "Chronic Salpingitis," by Dr. Frank Park, of Omaha; "Symposium on Extra-Uterine Pregnancy," (*a*) Clinical Picture and Treatment, by Dr. W. O. Henry, of Omaha; (*b*) Histology and Pathology, by Dr. E. C. Henry, of Omaha; "A Simple Method of Hystero-Myomectomy by the Aid of a Dagger Clamp," by Dr. H. M. Hepperlen, of Beatrice; "President's Address," by Dr. R. C. McDonald, of Fremont; "Suprapubic Prostatectomy," by Dr. A. I. McKinnon, of Lincoln; "The Abortive Type of Typhoid Fever," by Dr. Wm. R. Young, of Ansley; "Pain in the Upper Abdomen—What it may Mean," by Dr. J. E. Summers, Jr., of Omaha; "Something New in Antiseptic Procedure," by Dr. Wm. B. Ely, of University Place; "Some Incomplete and Some Wrong Diagnosis, by Dr. George Haslam, of Fremont; "The Diagnosis of Cancer of the Stomach," by Dr. H. L. Akin, of Omaha; "The Laryngeal Affections of Singers, by Dr. H. B. Lemere, of Omaha; "Smallpox," by Dr. Francis P. Dorsey, of Hartington; "Indications for Operation in Mastoid Disease," by Dr. S. E. Cook, of Lincoln; "Report of Two Cases of Leucemia and Two Cases of Splenic Anemia and their Diagnostic Differentiation," by Dr. W. O. Bridges, of Omaha; "Intestinal Obstruction," by Dr. R. D. Mason, of Omaha; "Nephritis—Etiology and Treatment," by Dr. John Mills Mayhew, of Lincoln; "Actinomycosis of the Lungs," by Dr. E. Fletcher Ingals, of Chicago; "Trypanosomes and Disease, with Demonstration of Nebraska Specimens," by Prof. Henry B. Ward, of State University; "Cysts of the Anterior Mediastinum," by Dr. A. P. Condon, of Omaha; "The Diagnosis of Hemorrhage from the Alimentary Tract, with Cases," by Dr. W. F. Milroy, of Omaha; "Variation from Routine Necessary in Some Operations for Inguinal Hernia," by Dr. John Prentiss Lord, of Omaha; "Symposium on Diabetes Mellitus," (*a*) Physio-Pathological Consideration, by Dr. I. N. Pickett, of Odell; (*b*) General and Special Etiology, by Dr. P. L. Gillispie, of Wymore; (*c*) Diagnosis—With Special Reference to the Preglycosuric Stage, by Dr. George H. Brash, of Beatrice; (*d*) Ocular Complications, by Dr. John I. McGirr, of Beatrice; (*e*) Nervous Phenomena," by Dr. C. P. Fall, of Beatrice; (*f*) The Precautions a Surgeon Should Take for Operating on Diabetic Subjects, by Dr. H. M. Hepperlen, of Beatrice; (*g*) Diabetic Treatment, by Dr. C. A. Love, of Beatrice; (*h*) Medical Treatment, by Dr. B. M. Deardorf, of Clatonia; "Some Notes on Mastoiditis with Spontaneous Perforation in the Digastric Fossa," by Dr. F. S. Owen, of Omaha; "Endocarditis—Its Etiology and Symptomatology," by Dr. C. W. M. Poynter, of Lincoln; "Adhesions About the Sigmoid Flexure," by Dr. Harry H. Everett, of Lincoln; "The Pharmacology of Antipyretics," by Dr. A. L. Muirhead, of Omaha; "Upon the Treatment of the Individual Case in Appendicitis," by Dr. C. C. Allison, of Omaha; "Diagnosis of Bright's Disease," by Dr. L. B. Pilsbury, of Lincoln; "The Symptoms Which Demand Operative Interference in Intestinal Obstruction," by Dr. Chas. O'Neil Rich, of Omaha; "Chorea—Its Etiology and Treatment," by Dr. H. M. McClanahan, of Omaha; "General Surgery," by Dr. H. C. Moore, of Omaha; "Too Much Medicine," by Dr. J. Lue Sutherland, of Grand Island; "Foreign Bodies in the Esophagus, and Foreign Bodies in the Larnyx and Trachea," by Dr. Warwick M. Cowgill, of Lincoln; "The Diagnosis of Gastric Ulcer," by Dr. H. J. Lehnhoff, of Lincoln; "Plaster Paris in the Treatment of Surgical and Traumatic Wounds of the Soft Parts," by Dr. H. Winnett Orr, of Lincoln; "Diseases of the Accessory Sinuses of Nose," by Dr. D. C. Bryant, of Omaha; "When and How to Operate for Prostatic Hypertrophy," by Dr. A. C. Stokes, of Omaha.

Association of American Physicians.—The twentieth annual meeting will be held in the New Willard Hotel, Washington, D. C., on May 16 and 17, 1905. Here is the interesting program: "President's Address," by Dr. E. L. Trudeau, of Saranac Lake; "A Study of the Fear of Cats and the Power to Recognize Their presence Unseen and Unheard," by S. Weir Mitchell, of Philadelphia; "Intrapleural Lipoma," by Dr. R. H. Fitz, of Boston; "Chylous and Chyliform Effusions into the Serous Sacs, with a Case," by Dr. J. C. Wilson, of Philadelphia; "Rhythmic Lateral Displacement of the Heart as a Sign of Unilateral Pleuritic Exudate," by Dr. Chas. L. Greene, of St. Paul; "Gonorrheal Septicemia and Endocarditis," by Dr. W. S. Thayer, of Baltimore; "Fever in Chronic Endocarditis," by Dr. J. S. Thacher, of New York; "Sphygmograms from Two Cases of Bradycardia," by Dr. George Dock, of Ann Arbor; "Clinical Notes on Opium in Myocarditis," by Dr. J. H. Musser, of Philadelphia; "Some Phases of the Neurotic Heart," by Dr. Beverley Robinson, of New York; "The Frequency and Etiology of Acute Non-Tuberculous Pneumonia in a General Hospital," by Wm. T. Howard, Jr., of Cleveland; "Report of a Case of Pneumococcus Sepsis," by Dr. J. S. Thacher, of New York; "A Report of Six Cases of Perforation in Typhoid Fever in Children," by Dr. J. P. Crozer Griffith, of Philadelphia; "Umbilical Hernia as a Little Recognized Source of Abdominal Pain," by Dr. D. D. Stewart, of Philadelphia; "Stone in the Kidney and Certain Conditions Simulating it," by Dr. D. D. Stewart, of Philadelphia; "A Study of Abdominal Tumors," by Dr. R. C. Cabot, of Boston; "Hematemesis from Gastric Ulcer; notes on 200 cases," by Dr. W. G. Thompson, of New York; "Relations of Certain Stomach Disorders to Diabetes Mellitus," by Dr. John S. Sawyer, of Cleveland; "Clinical Notes on the Use of Nux Vomica, especially in Certain Forms

of Hyperchlorhydria," by Dr. J. H. Musser, of Philadelphia; Election of Members; "Considerations on Proteid Diet with Especial Reference to the Distribution of Amide-Nitrogen, Diamino Nitrogen and Monamino-Nitrogen Therein," by Dr. L. F. Barker and B. A. Cohoe, of Chicago; "The Chloride Exchanges in Three Cases of Chronic Nephritis with Reference to the Dechloridation Treatment," by Dr. A. O. J. Kelly and Chas. A. Fife, of Philadelphia; "Chloride Retention in Nephritis," by Dr. Joseph L. Miller, of Chicago; "On the Toxicity of Bile," by Drs. S. J. Meltzer and W. Salant, of New York; "On the Nature and Origin of Cholemia and Uremia," by Dr. S. J. Meltzer, of New York; "Xanthelasma and Chronic Icterus," by Dr. T. B. Futcher, of Baltimore; "A Report of a Case of Lymphatic Leucemia in a Child of Three Years," by Drs. John Lovett Morse and Harry C. Low, of Boston; "Observations on Metabolism in a Case of Acute Leucemia and a Case of Purpura Hemorrhagica," by Dr. D. L. Edsall, of Philadelphia; "The Influence of the X-ray on Metabolism in Leucemia," by Drs. J. H. Musser and D. L. Edsall, of Philadelphia; "Chronic Acetanilid Poisoning," by Dr. D. D. Stewart, of Philadelphia; "Report of a Case of Acromegaly," by Dr. Chas. L. Greene, of St. Paul; "Further Observation on the Relation of Lesions of the Gasserian and Posterior Root Ganglia to Herpes Occurring in Pneumonia and Cerebrospinal Meningitis," by Dr. Wm. T. Howard, Jr., of Cleveland; "A Brief Report on Recent Researches in the Writer's Laboratory on Bacterial Toxins and Immunity," by Dr. V. C. Vaughan, of Ann Arbor; "The Nature of Cirrhosis of the Liver," by Dr. A. O. J. Kelly, of Philadelphia; "A Note with a Demonstration upon Experimental Pancreatitis," by Dr. Simon Flexner, of New York; "Experimental Arterio-Sclerosis with Demonstration of Specimens, by Drs. Richard M. Pearce and E. Stanton, of Albany; "Phlebo-Sclerosis," by Dr. C. F. Martin, of Montreal; "A Lantern-slide Demonstration on the Stages of Calcareous Degeneration," by Drs. J. George Adami and Oskar Klotz, of Montreal; Election of Officers and Concluding Business.

To Enlarge Willard Parker Hospital.—Plans have been filed with the Building Bureau for the enlargement and remodeling of the main building of the Willard Parker Hospital, in Sixteenth Street, east of Avenue C. A three-story extension, 38x78, is to be added on the front and rear.

OBITUARY.

Dr. William B. Beach, a son of the late Rev. Charles Beach, died at Long Branch, N. J., last Friday, of paralysis.

Dr. William B. Ulrich, president of the Pennsylvania State Medical Society, died last Wednesday at Chester, Pa., aged eighty-three years. Dr. Ulrich was the oldest practising physician in his section.

Dr. Hiram Barber died at his home at Ossining last week. He was eighty-five years of age. His father served in the War of 1812 and his grandfather served in the Revolution. He had been a member of the legislature, surgeon to the New York City Park Department, and physician at Sing Sing Prison.

Dr. Patrick J. Lynch died last week in New York. He was born in Ireland in 1828 and came to the United States fifty-five years ago. He was graduated from the University of the City of New York in 1857, and was chief of clinic to Dr. Valentine Mott for seven years. Dr. Lynch was a member of the American and State Medical Associations, the Academy of Medicine, the County Medical Society, the Physician's Mutual Aid Association and Medical Union.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, April 15.

PROPOSED FEDERATION OF LONDON MEDICAL SOCIETIES—CANCER CURES.

For nearly a century attempts have from time to time been made to bring about a combination of the London Medical Societies. Of the existing Societies the Medical, which dates from 1773, is the oldest. The most important, however, is the Royal Medical and Chirurgical Society, which will celebrate the first centenary of its foundation in May. This Society has a fine library and a handsome house in a central position. The Medical Society is, however, much richer, and the "Medico-Chi." is anxious to contract an alliance for the reason that impels British dukes to look for brides on the other side of the Atlantic. Hitherto the efforts at amalgamation have come to nothing, but now it seems to be considered that the question, as Gladstone would have said, has come within the sphere of practical politics. The proposal comes from the Royal Medical and Surgical Society, which of late years—mainly owing, to the multiplication of Societies, pathological neurological, clinical and what not—has lost a good deal of the Olympian character it once arrogated to itself. Men engaged in some special line of work naturally prefer to take their ideas and results to a society competent to appreciate them. Hence the "Medico-Chi." is gradually being left to the enjoyment of its own dignity while the living issues of medical science are discussed elsewhere. At a meeting held on April 10, Sir William Church, President of the Royal College of Physicians, of London, proposed that a new central body, to be called the Royal Society of Medicine, should be established and that all the existing societies should be regarded as subdivisions thereof. The proposal was received with unanimous approval and it was decided to appoint a committee consisting of two representatives from the Royal Medical and Chirurgical with the Medical Societies, together with one representative from each of the medical societies willing to consider the question of amalgamation and the Presidents of the Royal Colleges. This committee is to study the question in all its bearings and to submit a scheme of union to the various Societies for their consideration. It is not proposed to include local societies in the amalgamated body. The Societies which consent to join will to a large extent, retain their autonomy and their special character. The proposal has many advantages. Men will be able, for a comparatively small subscription, to enjoy the benefits of membership of Societies devoted to every branch of medical science, while workers in different fields will be kept in organic relation to general medicine and will thus be prevented from drifting apart as its various branches become more and more specialized. The difficulty in the way is almost wholly financial. If the Medical Society, the only one besides the "Medico-Chi." itself which has any property worth mentioning, stands out, there is no hope of a "combine" being effected. Apart from its antiquity and its property the Medical Society has no particular place in the universal frame of medical things; but naturally enough it is jealous of its independence and may not care to sink its individuality in a new body. How little inclined it is to allow itself to be merged in any other society is shown by its history. In the middle of the last century its membership seemed to be on the way to become a vanishing quantity, but it retrieved its

fortunes by a timely union with the Westminster Medical Society, which at that time was in a very flourishing state. It was intended that the union should be a junction of names as well as of forces. What actually happened might be described in the pathetic lines about the cassowary on the plains of Timbuctoo which swallowed the missionary "Bible, bands and hymn-book too." The smaller body played the part of the voracious bird, and simply absorbed the larger whose very name is now forgotten. It will not be able to repeat this performance in the case of the Royal Medical and Chirurgical Society and it is scarcely likely that it will itself submit to the process of phagocytosis. The story reminds one of the story of the two boa constrictors operating on a goat from opposite ends; it will be interesting to see how the struggle ends. The name of Royal Society of Medicine suggested for the new body does not strike one as a happy one. The Royal Society might fairly object to a title that would be sure to cause confusion. Doubtless a good many members of the Royal Society of Medicine might not object to the possibility of a misconception which would lead the public to regard them as decorated with what is looked upon here as the "Blue Ribbon" of science. An Academy of Medicine is what is wanted. It might consist of two grades of members, immortals and plain mortals, who might respectively be designated Fellows and ordinary Members or Associates. The latter would be allowed to join in the usual way. The former would be elected in recognition of valuable work done or of general eminence, and collectively would correspond to the Paris Académie de Médécine. These Fellows would form a purely scientific body fully representative of the highest knowledge, achievements and aspirations of the medical profession. To them Government would be able to turn for counsel in difficulties of which science alone can supply the solution. They would advise in large matters of policy regarding the public health. As things are, medicine in this country has no corporate voice. The British Medical Association was never accepted as the mouthpiece of scientific opinion and in the sphere of legislation it never had much influence with statesmen as it could not speak in the name of the whole profession. Now, under its new constitution, it has declined to an altogether lower range of feeling and action and concerns itself, in a spirit of parochial pettiness, with such matters as the fees to be paid to medical practitioners called in to help midwives out of difficulties, and the tribulations of club doctors.

M. Doyen paid a brief visit to London last week. He is said to have visited the Cancer Hospital and the Middlesex Hospital. As usual the newspapers have been busy about his doings. He seems to have "devoted an hour of his valuable time" to a representative of the *Daily News*, which is an organ of "anti's" of all sorts and conditions. On his interviewer asking him whether experience was supporting his discovery, M. Doyen is reported to have said: "For absolute proof we must have time. One cannot say in a day that a patient is cured of cancer. But I do claim now that my experience every day is confirming my belief that I have discovered the microbe. So also does the experience of others who are following my practice." Asked whether when the *Micrococcus neoformans* is inoculated into an animal cancer always resulted, he gave the guarded reply: "Tumors always result. These are of two sorts. Some are merely benignant; but others are undoubtedly malignant." He went on to say that the point of difference between him and some of those who have argued against his discovery lay simply in this, that he held malignant tumor to be cancer, and claimed that inoculation with the neoformans produces in animals, not merely benignant tumors, but malignant ones, which are similar to malignant cancer in man.

This lucid statement seems to have satisfied the simple-minded scribe who proceeded to ask about the use of the serum which is the practical outcome of the great discovery. M. Doyen replied that he had now treated about four hundred patients. All of them had certainly obtained relief, and about one hundred had shown marked improvement. Asked as to the permanency of the cure he said it was impossible to say at once that a cancer had been eradicated. Time alone could answer the question. One must wait for five years, and he had been working with the serum only for three or four years. He expressed the fullest conviction that cancer is a microbic disease, and he thinks it transmissible much as consumption is—not more. It is not directly infectious or contagious. But there is certainly danger where cancerous patients are, as, for instance, in the room wherein a patient has died. The microbe lurks in the dust, in the air, the clothes—everywhere, waiting for the conditions in which it can develop. Asked what these conditions are, he replied: "Always a weak state of health, a low condition of the blood, coupled with some spot which has been weakened by the results of a blow or some wound setting up inflammation. Of the actual causes we are still ignorant; but cancer, I think, always starts as a tumor. A blow, not causing much immediate pain, may set up internal inflammation resulting in tumor. If the condition of health be bad, a benignant tumor becomes malignant, and then cancer. The initial inflammation gives the microbe the chance for location, and the condition of health provides it with the opportunity for development, and the disease results." He went on to say that it attacked the poor chiefly because their condition does not enable them to maintain themselves in vigorous health. Underfeeding, bad feeding, dirt, kept them in a low state of health susceptible to disease. M. Doyen does not think that the evidence favors the belief that cancer is hereditary. If it runs in families that is because the different members happen to live in the same suitable conditions, such as the infected house and the manner of life. He admitted, however, that there are many mysteries connected with it which we do not yet understand. The disease is increasing in places owing mostly to poor conditions of life. Apart from that, he does not think that the disease is generally increasing.

M. Doyen adopts ways of making known his scientific views and results which differ from those customary in the medical profession. He might plead in excuse that the Paris Academy of Medicine had refused to grant him a hearing. On the other hand, he has always played to the gallery rather than to the stalls—a figure of speech which has a special appropriateness in view of the theatrical character of his surgical demonstrations. I believe M. Doyen's serum is being tried in the Cancer Hospital here. Certain members of the staff of that institution went to Paris recently to study his methods, and it is understood that his visit to London was made for the purpose of seeing how the treatment is being carried out. Nothing, however, beyond the fact of his visit, has been allowed to transpire; it may be added that the profession will wait for the reports without excitement or impatience. The Cancer Hospital is not regarded as a likely source of important additions to medical science or surgical practice.

OUR PHILIPPINE ISLANDS LETTER.

(From Our Manila Correspondent.)

To the Editor of the Medical News.

Dear Sir: The second annual meeting of the Philippine Islands Medical Association began last evening in the fine, handsome central hall of the new government laboratory building. This association has already done great work in bringing together the best medical minds of the Islands for the study of those diseases which most afflict here and for consultation on all matters relating to the sanitary condition of the country.

Dr. McDill, the president, in a very interesting address, regretted the fact that although every overture had been made to them, the native Filipino physicians had refused to affiliate with the physicians and surgeons who made up their association.

The statement surprised your correspondent and he sought in vain for the reason, the general opinion among the delegates being that no close community of professional interests was likely until a new generation of doctors, speaking the English language and educated in the modern medical schools of Europe and America. According to Dr. McDill there is ample opportunity for the young physician here. And I would call the special attention of some of the hundred thousand or so of doctors which the thousand and one medical schools at home turn out every spring, to Dr. McDill's statement:

"The population of the Islands is about 7,500,000, and statistics show that the total number of licensed physicians is only 360 and 217 of these are in the city of Manila. These figures mean that although in Manila there is one physician to 1,013 inhabitants, in the provinces the proportion is but one to 51,786, or one doctor to each 430 square miles. To supply the medical and sanitary needs of the country two to three thousand native physicians and sanitarians should be educated, if possible, here in the next twenty years."

It will be noted that the doctor uses the word native in speaking of the needed staff of trained medical men. I take it, however, that he and his associates would gladly welcome a very large addition to the number of physicians now in the Islands. And, indeed, from what I can learn, an excellent opportunity offers here to our young graduates for lucrative employment, for the fees as a rule are above the average.

The young American graduate settling here need have no excuse for getting rusty, since now that the new laboratory is opened he will have every facility for special courses of study and experiment.

Dr. McDill rather surprised me in his sturdy optimism as to the general healthfulness of Manila itself. He declared that it "is now a healthy and safe city (in which to live) and when certain public improvements are completed it will be the healthiest . . . city in the Orient." It had been proven, he said, that except for some intestinal disorders, which are being rapidly prevented and cured and a limited amount of epidemic infectious disease, there is nothing unusual in the kind and amount of disease encountered. Doubtless the good doctor knows of what he speaks but surely the wish is father to the thought when he adds this: "We believe that all will agree that by observing a normal and moral life, healthy Americans can live about as long here and enjoy as good health, . . . as we could in the home land."

One is tempted to take issue with the doctor on the use of the word "healthy," it is doubtless quite true that healthy persons will live about as long in the Philippines as in America, that is, so long as he does keep healthy, but it will scarcely be denied that an Anglo-Saxon, an American is very must less likely to *keep* in good health in Manila, in Iloilo, in Penay, in Samar, or in any other of their supposedly salubrious towns or provinces than in any one of thousands of our home cities and towns.

Dr. McDill is very hopeful, and with reason, I should say, as to the eventual stamping out of bubonic plague and cholera in the Islands. He says that, "a few years ago a single case of these diseases in any port would have meant a loss of millions to merchants, but to-day the presence of these diseases scarcely create a ripple of excitement, because the community knows that medical men have these scourges by the throat."

Dr. McDill ended with an earnest appeal for funds either from Insular, Governmental or private sources for a modern civil hospital in Manila. Such a hospital, the writer well knows, is a crying need. But of this I shall treat in a special letter.

Manila, March 2, 1905.

SOCIETY PROCEEDINGS.

JOINT MEETING OF THE CHICAGO NEUROLOGICAL SOCIETY AND THE CHICAGO MEDICAL SOCIETY.

Held March 29, 1905.

The President of the Chicago Neurological Society, Harold N. Moyer, M.D., in the Chair.

SYMPOSIUM ON EXOPHTHALMIC GOITER.

General Considerations.—Dr. L. F. Barker opened the discussion on this symposium. He said the disease has been named after investigators in several countries. Thus in English text-books it is frequently referred to as Graves' disease; in Germany, as Basedow's disease; in Italy, as Flajan's disease. But the syndrome was undoubtedly very well described by Parry earlier than by any of the authors mentioned, and strictly speaking we should, therefore, if we refer to the disease under the name of any one man, call it Parry's disease. The affection has been treated monographically several times. The best monograph on the subject is, he thinks, that of Möbius, published in 1896. There are but few facts known concerning the disease which are not dealt with in his treatise, and the speaker has drawn liberally upon it in the preparation of this review. During the last fifty years knowledge of the disease has increased with great rapidity. Everyone has become familiar with its outspoken forms, and the recognition of more obscure types has been rendered easier. The rarer symptoms of the disease have been carefully investigated; numerous new signs have been discovered; and the significance and frequency of many of the phenomena have been established. While the nature of the affection is not yet wholly clear, great strides have been made toward an understanding of it. The theory that a disturbance of the thyroid gland is responsible for the symptoms of the disease is now the dominant one, but, as will be pointed out later, this view has not met with universal acceptance, and there are some points difficult to reconcile with any of the theories yet propounded. In the treatment of exophthalmic goiter a great deal has been accomplished, really much more than is generally recognized. For the prevalent opinion among physicians and the laity seems to be that the disease is incurable; whereas the literature shows, and the experience of men who have dealt widely with the disease proves, that a good many cases get well. Some

patients apparently recover spontaneously; others, and in considerable numbers, after special treatment, medical or surgical, or both. With regard to the etiology, it is known that the disease occurs nearly five times as frequently in the female as in the male; that it is commonest in early life, and especially in the third decade; that it has a tendency to appear in the so-called neuropathic families; that many cases of the disease may occur in one family; that it often develops after emotional shock or prolonged emotional disturbance; that occasionally it appears as a sequel of some infectious process; and, finally, that, as far as has yet been made out, climatic and terrestrial conditions play no important rôle in its causation, though it would appear that it is rather more common in districts where ordinary goiter is prevalent. The disease has been met with in lower animals, in the dog, in horses and in cattle. Whether it is more frequent now than formerly cannot be definitely stated, but it seems rather strange that so striking a symptom-complex as typical exophthalmic goiter presents should not have been more commonly recorded in the older medical literature.

The Cardinal Symptoms.—As the cardinal symptoms of the disease are usually described we have the tetrad—tachycardia, goiter, exophthalmos, and tremor. In well-marked cases all these symptoms may be present, but in undoubted instances of the disease, one, two or even three of them may be absent. Some have even gone as far as to diagnose the disease in the absence of any one of these four symptoms. As a consideration of the atypical forms is to be discussed by Dr. Mettler, he would say nothing further on this phase of the subject. Aside from the thyroid gland, it is the circulatory system, the nervous system, the eyes and the skin, the functions of which are especially disordered, though there are also evidences of disturbed activity in still other parts of the body which must be referred to. One of the circulatory disturbances, the tachycardia, is usually the first symptom to be manifest. It is rarely, if ever, absent in the disease, and the character of the symptoms affords perhaps more information than that of any other regarding the course of the disease. The heart beats more rapidly, and more powerful than normal, and the patient has a disturbing subjective sense of palpitation. The tachycardia may be paroxysmal at first, but later often becomes continuous. Indeed, tachycardia unrelated to disturbances of digestion or to organic disease should always excite suspicion of the possible existence of Parry's disease. Occasionally murmurs, may be heard over the heart, especially at the base. Angina pectoris is not infrequently encountered. An interesting symptom on the part of the circulatory system is the marked pulsation of peripheral arteries, which may be limited to a group of vessels, most often the carotids; or it may be general; often one set of vessels will pulsate more at one time and another set at another; the throbbing may even be unilateral. In severe cases actual hemorrhages from small vessels may occur. The enlargement of the thyroid, in Parry's disease, is worthy of special consideration, for in the first place the Parry syndrome can appear after an ordinary goiter, though in many instances the goiter develops along with the other symptoms. This fact has led Möbius to divide the cases of Parry's disease into two groups: (1) The primary cases, and (2) the secondary cases. In the primary cases the struma is usually soft, the gland may not be very much enlarged and often the right lobe is more increased in size than the left. Large vessels cover the gland. The carotid pulsation is transmitted by it; a distinct thrill can often be felt on palpation and on listening to the tumor a systolic blow may be heard. Guttmann distinguishes an arterial bruit from a venous bruit, and believes that these sounds, if present, are pathognomonic for the disease. The goiter develops, as a rule, very slowly, but in some cases it grows with great rapidity, attaining a considerable size in a few days, or even within a few hours. It must be remembered that the parenchymatous changes in the gland characteristic of the disease may be present in the absence of goiter, and, further, that the goiter, at any rate in the primary cases, may be largely due to the dilatation of the blood vessels of the gland, for the gland is often markedly collapsible after death. Careful studies of the histological appearances of the gland have been made by Greenfield, Renaut, Brissaud, and others. There is a peculiar hyperplasia of the gland acini. Colloid is usually absent. According to Renaut, the lymph vessels in the central part of the glandular lobules are obliterated, while those at the periphery, the interlobular lymph vessels, are excessively distended. He believes that the absence of colloid is due to its transformation into a substance which he calls thyromucoin. Many of the symptoms of exophthalmic goiter are directly referable to a disturbance of the functions of the nervous system, and it is not surprising that many of the theories of the disease make it neural in origin. The psyche of the individual is rarely normal. Increased irritability is often one of the first signs. I have been much surprised in looking over the literature to observe how frequently cases of exophthalmic goiter have been associated with definite psychoses, with mania, with melancholia, and with other forms of insanity. Even when no definite psychosis exists, it is not uncommon to find patients overcheerful or excessively depressed. Insomnia is a common symptom. Flushings of heat are complained of.

The Nervous Symptoms.—Perhaps the most important nervous symptom is the tremor. It has been carefully studied by P. Marie, and is now regarded as a very constant phenomenon, though it undergoes marked variation in degree and continuousness. The tremor is usually fine and rapid; the rhythmical oscillations number from eight to ten per second. Among other nervous symptoms, tonic spasms, sometimes resembling those of tetany, and epileptiform attacks, may be mentioned. A symptom which is not at all uncommon is marked muscular weakness, which may become so exaggerated as to render the patient bedridden. Actual paralyses are described; Charcot called attention to the paraparesis which may occur, the German writers describe what they call "Basedow paralyses." As a rule, the tendon reflexes are not markedly altered, but they may be increased or diminished. It is a striking fact in pathological anatomy that despite the marked clinical symptoms referable to the nervous system, actual demonstrable lesions are rarely to be met with. It would appear that the poison in the disease, in acting upon the neural structures, is able to destroy functions without leaving behind indications of its action discoverable by our present histological methods.

The Eye Symptoms.—The eye symptoms of the disease are among the most characteristic. The ex-

ophthalmos appears to be due chiefly to the dilatation of the blood vessels of the orbit, though in long-standing cases an increase of the adipose tissue may be partly responsible therefor. The symptom known by the name of von Graefe is very often present, though not constantly. It may easily be overlooked unless tested for carefully, and he hoped Dr. Gradle would describe in detail the best method of eliciting the sign. Stellwag's symptom, the widened lid slit and the infrequent winking, is one of the earliest and most constant signs of the disease, and together with the exophthalmos causes the goggle eye. Möbius' symptom, insufficiency of convergence, best brought out by telling the patient first to look at the ceiling and then at the end of his nose, is an important accessory sign, though not pathognomonic. With the insufficiency there is no diplopia, though the patient may experience a feeling of tension. Actual eye-muscle paralyses are rare, but do occur, and may be associated with paralysis in the domain of the fifth or the seventh cerebral nerve. Tremor of the eyeball, tremor of the eyelid (Rosenbach's symptom), excessive lacrimation, are among the other occasional eye symptoms. He mentioned these only, as Dr. Gradle was to take up the ophthalmological side of the clinical picture in detail. On the part of the skin, increased sweating is the most important symptom. It is usually general, though it may be localized. The increased moisture due to it appears to be responsible for the lessened resistance of the skin to the passage of the electric current (Vigoroux's symptom). The skin may be pigmented, sometimes as markedly as in Addison's disease. There may be circumscribed edema; urticaria factitia is not uncommon. Occasionally marked trophic disturbances, including falling out of the hair and scleroderma, may be met with, especially where exophthalmic goiter is complicated by myxedema. The symptoms referable to other parts of the body may be dismissed in a few words. Diarrhea is not infrequently a troublesome symptom. According to the researches of F. Müller, metabolism must be profoundly altered, for in spite of the bulimia usually present in the disease, the patients emaciate rapidly and the nitrogen output exceeds the intake. Transient fever is very often present, even in the mild cases, but a high temperature, or one lasting over a long period, is seldom met with except in the severer forms of the malady. Gowers has called attention to the enlargement of the lymphatic glands, which may be present, and Markham asserts that a persistent thymus may nearly always be found at autopsy. A sign contributed by an American clinician, the so-called Bryson's sign, consists in the slight expansion of the thorax on inspiration. It has been commented upon, among others, by Patrick. Four principal theories of the disease have been put forward: (1) That it is due to disease of the sympathetic nervous system; (2) that the seat of the malady is in the medulla oblongata; (3) that it is primarily a disease of the thyroid gland, and (4) that it is a neurosis. The tachycardia, the throbbing and dilatation of the blood vessels, the vasomotor and secretory disturbances generally, and the exophthalmos naturally have directed the attention of investigators toward the sympathetic nervous system. The fact that same of the symptoms point to paralysis of the sympathetic, and others to irritation, need not necessarily militate against the view, since it is common in neural lesions to meet with such mixed symptoms. That the medulla oblongata is the seat of the disease is a theory founded on very few objective facts. There have, it is true, been found occasionally at autopsy slight lesions in the medulla oblongata, such as ecchymoses in the floor of the fourth ventricle, partial agenesis or atrophy of the tractus solitarius, but nothing of a pathologico-anatomical nature has ever been observed, which could satisfactorily account for Parry's syndrome. It was Filehne's experiment, he takes it, upon the corpus retiforme which lent most support to the bulbar theory. He produced some of the symptoms of the disease, and his experiments have been more or less confirmed by other observers. The work should undoubtedly be further followed up. The well-known fact that in strong emotional excitement, for example, in horror, the eyes protrude, and are fixed upon the horrible object, the heart beats fast, the individuals breaks out into a sweet, and sometimes even the thyroid is temporarily enlarged, has been used to favor the bulbar hypothesis, it being assumed that there must be some center in the medulla oblongata, stimulation of which calls forth the combination of symptoms mentioned.

The dominant theory at the present time is that in which a primary disease of the thyroid gland is made responsible for the affection. Since 1873, when Gull described myxedema, and in 1878, when Ord showed that the thyroid is atrophied in that disease, progress concerning the relation of the thyroid gland to the rest of the organism has been making rapidly. In 1882 Reverdin demonstrated that on excision of the thyroid in animals a myxedema operativum develops, the condition subsequently designated by Kocher as cachexia strumapriva. Later Murray discovered that the feeding of thyroid substance to myxedematous patients or to animals with cachexia strumapriva would cause the symptoms to vanish, whereupon the belief seemed well founded that myxedema is due to diminution or loss of activity of the thyroid gland. Now histological examination and macroscopic observation have shown that in exophthalmic goiter we have to deal, as a rule, not with an atrophy, but with an hypertrophy of the thyroid gland, and in 1886 Möbius advanced the hypothesis that Basedow's disease is the result of a pathologically increased activity of the thyroid. He suggested that in exophthalmic goiter we have to deal with a primary disease of the thyroid, as a result of which a secondary intoxication of the rest of the body occurs, giving rise to the other symptoms. He urged that since the disease is a form of goiter, it is easy to understand the part played by heredity, the predominance among females, the influence of disease of the sexual organs, its occurrence along the other forms of goiter, the occasional transition to myxedema and the success of operative treatment. It has for some time been asserted that the feeding of thyroid glands in excess may produce some of the symptoms of exophthalmic goiter, though not all of them. Experiments connected therewith have, it is true, caused much discussion. Buschan declared that he took a large number of thyroid tablets with toxic effect, and Gragor reports prolonged feeding of idiot children with thyroid substance without the production of Basedow's symptoms. On the other hand, Notthafft records a case where actual exophthalmic goiter developed after the ingestion of 1,000 tablets, and Oppenheim tells of an instance in which a woman receiving nine tablets per day to combat obesity, became the victim of Basedow's disease. The fact

that exophthalmic goiter is occasionally associated with myxedema would seem to contradict Möbius' hypothesis, for according to his first conception of the disease myxedema and exophthalmic goiter are the very antithesis of one another, the former being due to an atrophy of the gland, with loss of function; the latter to an hypertrophy of the gland with increase of function. Möbius, however, does not regard the simultaneous occurrence of the two diseases as inconsonant with his theory since, as he now conceives of exophthalmic goiter, there is along with the early hypertrophy and hyperthyroidization a perversion of function, the so-called dysthyrosis. This could easily go over in late stages of the disease into athyrea.

Modern Therapeutic Measures.—Modern therapeutic measures have been largely based upon the thyroid theory and the results of therapeusis have been adduced in support of it. There is no gainsaying the fact that the results of partial strumectomy indicate that the successful removal of a portion of the thyroid gland can lead to pure or to definite amelioration of the condition. The statistics of Heydenreich, Starr, Rembach-Mikulicz and Kocher are very interesting and convincing. Again, the reports of the French surgeons, especially those of Chipault and Jonnesco, who resect the sympathetic on one or both sides in order to affect the thyroid secretion are very suggestive. The treatment by an antithyroid serum appears to have given in some cases remarkable results. On the theory that the thyroid secretion normally neutralizes certain general metabolic poisons in the body, Möbius and others conceived of treating cases of exophthalmic goiter in which there is presumably an excess of thyroid secretion in the body, by introducing subcutaneously or by the mouth the serum of thyroidectomized animals. It was hoped that the non-neutralized general metabolic poisons of such animals would nullify the toxic effect of the excessive thyroid secretion. Merck's antithyroidin, Burghardt and Blumenthal's "rodagen," Hallion and Varion's glycerin extracts of the blood serum, Vallet and Enriquez's serum, and Lanz's milk of thyroidectomized goats—all are administered on this principle. The theory that exophthalmic goiter is primarily a neurosis, first championed by Charcot and his pupils, still has supporters among the ablest men of the profession. A survey of the whole subject makes the speaker personally unwilling for the present to deny it. The history of the affection, its etiology, its complications, the spontaneous cures which occur, the remarkable influence at times of suggestion, all make one think of a neurosis. Undoubtedly, the function of the thyroid is gravely altered in the disease, but those who hold to the neurosis theory look upon the thyroid change as secondary to a primary nervous disease. But such an assumption is far from satisfying, for one should have then to seek the cause of the neurosis. The fact is the pathogenesis of exophthalmic goiter is still wrapped in mystery.

Treatment.—As to treatment, experience has shown the great importance of general measures; complete rest for a time, fresh air, careful diet, mild balneotherapy, all are useful. He personally favors rest, isolation and systematic psychotherapy as a routine treatment. In cases which do not respond to this or to antithyroid therapy, operation may be considered, but if it is to be done, it should be undertaken before marked cachexia develops, and before the heart is too seriously diseased. Before any safe conclusions can be drawn regarding any form of treatment, a large number of cases should be observed over long periods. Results so favorable as to be startling have been obtained from the most diverse forms of treatment, even from feeding thyroid as well as from antithyroid medication.

The Larvated Forms of Exophthalmic Goiter.—Dr. L. Harrison Mettler, in his paper on this subject, stated that to-day, as in the days of Flint and Trousseau, there are those who find exophthalmic goiter to be a rare affection, while there are others who regard it as a common trouble. The definition of exophthalmic goiter is still subject to modification. A tabulation of its so-called symptoms shows upward of 75 clinical phenomena. In order to get at something definite, the author separated these clinical phenomena into (*a*) typical symptoms; (*b*) doubtful symptoms; (*c*) mere complications and associations. The definition of an atypical case of Graves' disease must rest upon that of a typical case; and, moreover, however atypical the case may be, it still must be recognized as a case of the disease and not rest under a mere suspicion. Here is where the difficulty begins in the diagnosis of exophthalmic goiter. Anybody can diagnose a frank, complete, well-developed typical case; but not always can an obscure, masked, incomplete, atypical case be recognized. The former cases are rate, possess a comparatively bad prognosis, and are not very encouraging from the therapeutic standpoint. The latter cases are much more common than are usually supposed, enjoy a comparatively favorable prognosis, and are highly amenable to treatment. Hence the latter cases should receive the closest study on the part of the practitioner. It is agreed pretty generally now that a typical case of Graves' disease must reveal the classical triad of symptoms—tachycardia, struma, and exophthalmos. When combined or single, these symptoms will answer for the making of the diagnosis, if they are sufficiently pronounced, for their characteristics are such in this disease that they are not likely to be mistaken for similar phenomena in other diseases. The same may be said of a fourth symptom—the tremor, but with less positiveness. These are the four cardinal or typical symptoms of Graves' disease. Without one or more of them, exophthalmic goiter cannot be diagnosed, no matter what may be the number of the other innumerable symptoms, associated events, or complications. There is a large class of cases, the formes frustes, so much studied by the French authors, in which tachycardia with general nervousness, tremor, and possibly slight evanescent struma or exophthalmos occur. The heart irregularity comes on suddenly after a severe strain or sudden shock, mostly in a woman with hysterical tendencies, or with a neuropathic ancestry. It exhibits the typical traits of the Basedow tachycardia, such as the persistent elevation of the pulse beat, the peculiar thrill. With it is a general nervousness and possibly a number of symptoms, such as a mild psychosis, hyperidrosis, vertigo, aboulia, weakness, and even some general emaciation. These cases are not infrequently mistaken for simple neurasthenia, tuberculosis, and other affections. They are undoubtedly instances of the disease, but are masked and ill-defined. If they get well, with or without treatment, they remain as examples of the larvated forms; if they go on and in months or years ultimately develop all of the cardinal signs, they enter the class of typical but delayed cases. Their etiology

is obscure; their symptomatology includes any of the more or less indefinite manifestations commonly recognized in neurasthenic and hysterical states plus one of the cardinal symptoms of the disease, which cardinal symptom is usually the characteristic tachycardia; their prognosis is uncertain, though generally it is good. Their course is brief and intermittent; and their treatment is simple and highly satisfactory. Caution is necessary in regard to hastily attributing the recovery of these cases to any specific mode of treatment, for as they so often recover with no other treatment but physical rest and mental quietude, any hasty conclusion as to the efficacy of this or that medicament may be the result of a mere *post hoc* reasoning.

Ocular Symptoms of Graves' Disease.—Dr. Henry Gradle discussed this phase of the subject, saying that in well-marked Graves' disease the patient has a wild, staring look, amounting to even an expression of terror. This is caused by protrusion of the eyeballs together with retraction of the upper eyelid, whereby some of the sclera is exposed to view above the cornea. The widening of the lid aperture is peculiar to this disease, and does not accompany protrusion of the eyeball from other causes. The exophthalmos varies in degree. It may be so pronounced that the lids cannot be closed. Even partial forward dislocation of the eyeball has been seen on attempting forcible closure of the lids. On the other hand, the exophthalmos may be inconspicuous or not alike in the two eyes. One-sided exophthalmos is not excessively rare. Indeed, the diagnosis of Graves' disease is occasionally certain, even without exophthalmos, or the latter may develop after the other cardinal symptoms have existed for a while. Conversely, protrusion of the eyes or even of one eye only, when accompanied by the characteristic retraction of the upper lid justifies the diagnosis of incipient or incomplete Graves' disease, even though goiter and heart symptoms be absent. The retraction of the upper lid exposing the sclera to an abnormal extent is perhaps more characteristic of Graves' disease than mere protrusion of the eye. It is less often absent than the exophthalmos, and, like the latter, it is occasionally, though rarely, one-sided. In rare instances it is present without exophthalmos. At times the lower lid, too, seems slightly retracted. The retraction of the eyelid is often called Stellwag's sign, but not properly so, for it has been described previously. Stellwag really was the first to call attention to the infrequency of winking movements of the lids in this disease. The exposure of the sclera is exaggerated when the patient looks downward. In the normal person the downward motion of the eye is accompanied by dropping of the upper lid, so that nothing above the upper corneascleral junction is exposed to view. Von Graefe pointed out that in most instances of Basedow's disease the upper lid does not follow the downward motion of the eye, but lags behind, and hence looking down intensifies the strange expression of the patient. Von Graefe's symptom is not constant. Pigmentation of the skin, resembling the bronze color of Addison's disease, have been noted especially by Drummond, on various areas of the body and also around the eyes. Jellinek has lately again referred to the diffuse brown coloring of the skin of the eyelids, the upper more than the lower, as an early, though not constant and sometimes evanescent, symptom in exophthalmic goiter. Möbius has observed insufficiency of the converging power of the eyes as a fairly frequent occurrence in Graves' disease. On following an object approaching the face, one eye will cease converging and will deviate outward when the object is within some five to eight inches, instead of the normal near. other post-mortem records the exophthalmos was point of converging of about three inches. The patient may, in consequence, complain of fatigue of the eyes when doing near work. Pulsation of the arteries of the retina has been described by Becker as common in this disease. Other observers have not seen this pulsation as often as Becker. The protrusion of the eyeball is partly due to increased vascularity of the orbit, as it always diminishes after death. In some autopsies the eyeballs, prominent in life, were even found receded to normal position, and no anomalies were observed in the orbit. In explained by the increased amount of fat found within the orbit. The ocular muscles were infiltrated with fat and the optic nerves elongated. The retraction of the upper lid can be imitated by the action of the orbital muscle of Müller under the influence of the stimulated cervical sympathetic nerve. In man, its converse, drooping of the lid, is observed when the sympthetic has been paralyzed by any lesion. Yet in an autopsy of Drummond's, no Müller muscle could be found at all on dissecting the orbit. When recovery occurs in this disease, either spontaneously or under treatment, the eye symptoms can disappear completely. Some instances have been observed, however, in which a slight degree of exophthalmos existed after apparent recovery from the other manifestations of the disease. If the disease continues without improvement, there is no reason to fear any eye complications or sequels except danger to the cornea in relatively rare instances. This relatively favorable prognosis was particularly emphasized at a discussion on Graves' disease before the Ophthalmological Society of the United Kingdom, in May, 1886, in which probably the largest collected experiences of the world were brought out. A few exceptional cases in which optic neuritis, optic atrophy, or ocular palsies have been observed must be regarded as coincidences of separate lesions in neuropathic subjects. When the gaping lids afford insufficient protection to the exposed cornea, ulceration of the latter may take place. This does not seem to be a frequent occurrence, especially in recent times. Personally, the author has seen one instance of it which proved manageable. It was mentioned oftener in the earlier German literature, and seems to have been observed most frequently in the case of elderly men, in whom the entire prognosis is more serious than in women or in general in younger people. It can be guarded against or made to heal when not too far progressed by a protective bandage or operative closure of the gaping lid aperture. There is a single case on record by Dor, of the occurrence of conical cornea in a patient with Graves' disease. The causative relation of the latter to the stretching and deformity of the cornea was suggested to Dor by the unusual improvement of the keratoconus in both eyes, only one of which had been operated upon, when the patient recovered from the goiter under the administration of thymus. It has been the author's fortune to have seen recently a similar coincidence of these two obscure conditions—exophthalmic goiter and conical cornea.

The Serum Treatment of Exophthalmic Goiter.—Dr. Harold N. Moyer said that until the last few

years the obscurity in which we labored in regard to the etiology and pathological changes responsible for the symptom-complex of Graves' disease precluded all possibility of adopting any rational method of treatment for this affection. Digitalis, strychnine, belladonna, the bromides, rest cure, massage, electricity, and the numerous other remedial measures have all failed in the majority of instances to produce any material effect upon the course of the disease. Since Möbius, Ballet, and Enriquez and other investigators conceded that exophthalmic goiter was due to a functional derangement (an excessive or perverted secretion) of the thyroid gland, considerable progress has been made in the treatment of this affection. If the disease be the result of a too abundant or an excessively toxic secretion of the thyroid gland, the only rational form of therapy consists either in checking this secretion or else in neutralizing the toxic products thrown into the blood stream. The first of these alternatives was beyond our control, but, as the thyroid secretion is perhaps normally neutralized by certain antibodies present in the blood, the serum or blood of animals from which the thyroid gland had been removed and in which these antibodies had been allowed to accumulate for some time, should prove capable of neutralizing the excessive or perverted secretions causing Graves' disease. The first experiments conducted along these lines were undertaken independently of each other by Ballet and Enriquez, in Paris, and Lanz, in Amsterdam. The former used the serum, the latter the milk of thyroidectomized animals. The results obtained by either method were very encouraging. Further experiments along these lines were conducted by Burghart, Schultes, Göbel, Möbius, and others, some using the milk, others the blood of thyroidectomized animals. The same properties which were found in the blood and serum proved to be present also, although in not as great a concentration, in the milk of these animals. The latter was preferred by some experimenters because it proved less expensive than the pure sera. The serum was at first administered subcutaneously, but as it was found that the same results could be obtained by using slightly larger doses per os, this latter method was considered more desirable. Since the results of the investigators above referred to have been published, there have appeared occasional articles, especially in the German medical journals, reporting cases treated by the use of preparations derived from thyroidectomized animals.

The new preparation—thyroidectin—is derived from the blood of the thyroidectomized animals. In the preparation of these capsules, not only the serum but the entire blood has been utilized. It forms a reddish-brown powder, readily soluble, non-toxic, unirritating to and rapidly absorbed from the stomach. It is put up in five grain capsules, of which one or two are administered three times a day, according to the needs of the individual case. This remedy has fairly passed the experimental stage; it has been placed in the hands of prominent neurologists in this country, who are careful observers, and have testified to the fact that it possesses at least the greatest palliative value in the treatment of exophthalmic goiter. Although thyroidectin is recommended especially for the treatment of exophthalmic goiter, it may also prove of value in various nervous disorders of obscure etiology, more or less closely related to Graves' disease, although the author has no actual data on the use of the preparation.

A preparation similar to thyroidectin has been in use on the continent for some time. Dr. S. Christens has used milk (rodagen) and serum of thyroidectomized goats, but for the last four years has confined himself to the use of blood tablets prepared in the following manner: The blood of a thyroidectomized goat is distributed in thin layers in shallow dishes, dried in an incubator at body temperature, powdered, some gum added, and made up into 35 cgm. (5 gr.) tablets. These tablets proved readily soluble in artificial gastric juice. Christens has treated up to this time 18 cases, all of which, with the exception of a few, which were treated only a short time, were considerably benefited.

Personal Experience with the Serum Treatment in Exophthalmic Goiter.—Dr. Sydney Kuh discussed this phase of the subject. He reported 11 cases of exophthalmic goiter, of whom one was treated by the administration of the serum of the thyroidectomized animal furnished by Merck, while in the other cases either the liquid or the desiccated serum furnished by Parke, Davis & Co., was given. His conclusions are as follows: His experience has not been sufficient to justify him in making any statement as to the curative effect of the serum. He believes, however, that he is justified in saying that it is an excellent palliative, at least; that it is not an infallible remedy is very probably true. Among the 11 cases there was one in which the effect of the treatment was temporary only, and another one in which there was possibly no effect at all. One thing was very striking, and that was the marked and rapid improvement in the subjective condition of most of the patients. Within a few days after taking the first dose of the serum they would report a change for the better. The remedy influences the pulse probably as much as anything that is employed in the treatment of tachycardia in exophthalmic goiter; it increases the appetite and decreases nervousness. It has, if one may judge from the series of cases he reported, a pronounced tendency to increase the weight. Theoretically, it seems hardly probable that the results from the serum should be permanent. One perhaps may expect that after some time a smaller does may suffice, that perhaps an intermittent treatment only may be required. In one case, the first one reported, the patient has been without serum now for quite a long period—for approximately two and a half years, and has remained in excellent health all that time, but it seems doubtful whether she will remain in that condition unless she occasionally takes a few doses of the serum.

Two Severe Cases of Exophthalmic Goiter.—Dr. Charles L. Mix said that he has had two very pronounced cases of exophthalmic goiter since Dr. Moyer put the serum into his possession. The first of these was a woman, who was in the Mercy Hospital for quite a period, with no diagnosis. Her case was regarded as a peculiar one. It was recognized that the heart was dilated, but further than that, and further than the neurasthenic and hysterical symptoms, nothing positive was made out. When he returned from his vacation in August, or September, the interne showed him the woman, and after a while the speaker recognized the case as one of exophthalmic goiter. He showed her to Dr. Moyer, who bore witness to the exquisite von Graefe's sign which was present. In fact, Dr. Moyer told him that it was one of the best he had ever seen in any case. The patient's pulse ranged from 120 to 130; it reached even

140. As to the *modus operandi* of this serum, the theory of Möbius is very simple. Myxedema and exophthalmic goiter are antipathal diseases. Myxedema is due to a diminution in the proper secretions of the thyroid gland, and atrophy possibly of the glandular tissue, while exophthalmic goiter is due, according to the theory of Möbius, to an excess of secretion or of some substance which circulates in the blood and has some definite purpose. In the case of myxedema it is necessary to give patients the thyroid gland, to introduce into their bodies or tissues a substance they need; and, conversely, in a case of exophthalmic goiter it is necessary to take out of the body of the individual those substances which are poisoning him or her, as the case may be. In this case this woman weighed 22 to 30 pounds less than she does at the present time. She was toxic in the ordinary sense of the word. One symptom characteristic of exophthalmic goiter is myasthenia. All of the individuals are weak. There may possibly be some relationship between myasthenia gravis and the thyroid gland, or possibly the relationship is one entirely of the muscles. But in this particular case the woman, who was bedridden, who had to give up doing housework and had to go to a hospital, to remain there for weeks in bed, was taken by a visiting nurse to Grove House, and is now working there in a laundry. She has gained forty pounds since she has been in Grove House, and her pulse ranges in the nineties at the present time. She is working for her living, and can work satisfactorily for a time. In addition to the improvement in tachycardia; in addition to the gain in weight, and in addition to the gain in strength, the doing away of myasthenia, there is a very pronounced effect also in the condition of the thyroid gland. The neck has diminished materially in size. The heart also has decreased in size materially. The other case is one very much worse than this. There is no particular harm in mentioning names. I will say, that Dr. Doering saw this woman and said he could not do any more for her. He gave her up. Dr. Murphy saw the woman and gave a similar prognosis. Dr. Herrick also saw her, and told her he could do nothing for her. Dr. Babcock, who saw her, said it would be impossible practically to do anything for her. Why? Because she had reached the stage when the heart was giving way, when edema was rapidly appearing. She had very marked ascites. The girth of the navel was 37 inches. Her legs were excessively edematous. Her heart was a beautiful example of delirium cordis. The pulse rate ranged between 140 and 150; the neck measured 14½ inches in circumference. She was 20 pounds under weight, but after the disappearance of the ascites she gained 20 pounds. At first she refused to take serum, but she was finally induced to take it, and took it in doses of 2 c.c. three times a day, which was afterward reduced to 1 c.c., three times a day, and then the serum was abandoned altogether, and dry serum was given. The other case took the dry serum from the start. She was given thyroidectomized serum, or the serum from a thyroidectomized horse was injected, and the patient grew worse, so that she would have nothing to do with horse serum. Goat serum proved to be her only salvation.

After using it during the winter, the patient was able to come to the speaker's office, during which time Dr. Moyer saw her. She had also visited his house on one occasion, and would have been at the meeting to-night if there had not been a sudden change in the weather. She has gained something like 20 pounds in weight; her pulse rate at present is about 111.

ASSOCIATION OF CLINICAL ASSISTANTS OF WILL'S HOSPITAL.

Second Regular Meeting, held February 1, 1905.

The President, George Robinson, M.D., in the Chair.

Color-Blindness in the Motormen and Conductors.—Dr. Helen C. Upham read a paper calling attention to the absence of examinations for this affection in these employees on suburban trolley lines. It was pointed out that many of the accidents occurring could be prevented by proper color signals recognized by the motormen. The colors red and green especially, she said, should be recognized by them. The tests should not be made with wools or colored miniature lights, but, as has been pointed out by Dr. Charles A. Oliver, they should be made under the actual conditions on the road and under atmospheric conditions. On many of the suburban lines a speed equalling that of the steam cars is attained. The cars rush through thickly populated neighborhoods with their human freights at the mercy of those who may or may not know the danger signals, no tests having been previously made. She believed that these men should be subjected to the same examination for acuity of vision and colors as is required of steam railways, ships, and in all occupations involving the ability to distinguish between the primary colors.

In the discussion, Dr. J. Hiland Dewey reminded the members that many of the accidents on a road occurred not as a result of color blindness, but by an ignoring of the danger signals through carelessness of those who are responsible. Dr. John T. Krall thought that no matter if some employees were careless, and caused loss of life, care should be taken in selecting only those who had full acuity of vision in each eye and normal color perception in both eyes. The examination should be made only by those who are known to have normal color perception. He believed that the whole subject of examination of trolley car employees was a very important one.

So-called Traumatic Conjunctivitis.—Dr. James A. Kearney presented this case, also a case of ulcer of the cornea in which dilation of the pupil had not been obtained until eserine had been used for a week followed by atropine.

Foreign Bodies in the Eye.—Dr. Dewey exhibited five pieces of wood which he had removed from the orbit of a child. Each piece measured about a centimeter long and ranged from one to three millimeters in diameter. The only history obtainable was that the child had run a stick against the eye while playing. The pieces were found situated between the eyeball and the outer wall of the orbit. They were deeply imbedded in the orbital tissues. At the time of presenting the paper the eye was in a healthy condition and the orbital wound had healed very nicely.

In the discussion Dr. Robinson commented on the similarity in length of the various pieces, and the remarkable amount of wood which had been stored in the orbit of such a young subject. Dr. Dewey promised a full report of the progress of the case at a later date.

HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

Regularly Monthly Meeting, held January 28, 1905.

The President, Augustus S. Knight, M.D., in the Chair.

The Scientific business of the evening was opened by the presentation of patients.

Epithelioma of Penis.—Dr. Follen Cabot presented a case of epithelioma of the penis which had been treated by operation with immediate good results. The patient first noted, some seven months ago, what appeared to be a pimple on the organ. He paid no attention to it for some time, but it kept on growing constantly in size. He used various washes, but of course without success, and seems to have been afraid to consult a physician. The tumor increased until it became a cauliflower-like growth, but did not interfere in any way with urination. As the result of the growth of the malignant tumor, cachexia developed and, though there are no cardiac or pulmonary symptoms, he lost forty pounds in six months and his complexion took on a yellowish cast, so typical of severe malignant disease. Considering the age of the patient there seemed no doubt of the diagnosis and microscopical examination of the specimen since has shown the peculiar grouping of the cancer cells of malignant disease. The whole organ was removed, leaving an opening of the urethra and perineum for purposes of urination. Immediately after the operation, the patient began to gain in weight and after three weeks was discharged in a much better condition than on entrance, and with his wound perfectly healed. He now suffers from no discomfort, and is to report regularly lest recurrence should take place.

Spontaneous Cure of Empyema.—Dr. Scott presented a patient aged about five years, in whom a collection of purulent fluid in the pleural cavity had disappeared after a test by the hypodermic needle had shown its presence. The patient suffered from pneumonia some five weeks before the difficulty of breathing and general depression occurred, which pointed to the existence of some sequela. Examination showed that the lower lobe of the left lung gave a perfectly flat note for two or three inches above the diaphragm. Skoda's resonance occurred just above. There was no heart displacement, but on two occasions pus was obtained by aspiration, an ordinary hypodermic syringeful being obtained on each occasion. The patient was admitted to the hospital with the idea that an operation might be necessary, but improvement took place and no signs of the pus that was present are to be found.

Absorption from Serous Surfaces.—Dr. Howard Lilienthal in discussing Dr. Scott's case said that surgeons are thoroughly persuaded now of the absorption of pus from the peritoneum. If purulent fluid is not in too large amount and is not over septic, the peritoneum can be trusted to care for it perfectly. Why should not the pleura then be expected to do as much? At times a sacculated empyema may not contain as much pus as was anticipated. Dr. Lilienthal has drawn off a half ounce of pus by aspiration and then opened up the pleura two days later to find that there was no more present. On the other hand the aspiration of frank creamy pus from the cavity of the joint may be followed after the application of a plaster splint by complete recovery. In a word, surgeons are receding somewhat from the principle that wherever there is pus, it must be evacuated, and the question that comes for consideration is how toxic may be the purulent fluid in a given case.

Subsequent Dangers.—Dr. Charles Schramm said that where purulent fluid is allowed to remain in the pleural cavity for some time, even though it may be absorbed, the subsequent condition of the patient is not likely to be so thoroughly satisfactory as if it were well evacuated. The future outlook of the case is not so good.

Dr. Spooner said that certain surgeons now incise a bubo and after pressing out some of the material, simply sew up the edges of the incision and it usually proceeds to get well. In a word, it would seem as though the relief of tension and pressure on the tissues enables nature to care for the purulent material in her own way. The ultimate results are claimed to be better than by the attempt to completely remove all infectious material.

Dr. Foote said that for small amounts of purulent material, the skin can be trusted to take care of them perfectly and the same principle would seem to hold good for small collections of pus in other parts of the body. For larger collections of purulent material, however, the question is very dubious.

Dr. Sturgis said that small abscesses might be removed by absorption, but larger amounts of pus must be treated by surgical procedure. As to the opening of buboes, it is an extremely difficult matter to decide when pus is present. An incision into a bubo containing no pus might readily cause its resolution before pus formation. This may account for some of the good results obtained by the newer French method of immediate closure after incision.

Pleural Absorption.—Dr. Frank Daniels said that as a rule whenever there is purulent effusion into the pleural cavity, there is so much thickening of the pleural serus membranes that its ordinary absorptive function is almost sure to disappear. Owing to the extent of the peritoneum, the same difficulty with nature's processes does not occur, some portions of the peritoneum are almost sure to remain healthy. Dr. Daniels has never seen a pleural purulent effusion removed by absorption. He has seen it evacuated in many ways, especially by coughing up through the lungs, but would find it hard to trust to nature to remove pus that has actually collected in the pleural cavity.

In closing the discussion, Dr. Scott said that the lesson of the case would seem to be that children react very differently to certain infections than do adults. Their vigorous growing tissues seem to be able at times to throw off infectious material that would utterly hamper the function of even adult tissues. It seems well in many cases then not to be over hasty in the surgical treatment of children, since nature can be trusted so much more. Such cases of absorption of purulent exudate must be very rare, yet if they do occur, the care of children with the deliberate idea of encouraging such a very favorable result must be borne in mind.

Sea Air and Surgical Tuberculosis.—Dr. J. W. Brannan reported the results of the treatment of certain children suffering from surgical tuberculosis by means of sea air. The little patients were sufferers from tuberculosis of bones and glands and derived such benefits from eight months of residence at the seashore as to make it very evident that this form of treatment is much more important than the most careful surgical intervention and the most scrupulous postoperative attention in the best regulated city hospitals. The idea of course is not new, since

for nearly fifty years now the French have had hospitals near the seashore in which children suffering from surgical tuberculosis have been under treatment. The results obtained at the French hospitals have been such as to make it clear that the expenditure of money in this way is amply repaid by the better results obtained. In England only one seashore hospital of this kind has been established, but here too the results have been excellent.

New York Experience.—The New York Association for the Improvement of the Condition of the Poor, realizing how much there was to be desired in the improvements of children's health under hospital treatment when suffering from surgical tuberculosis, that they sent a delegate to investigate the conditions in France. His report was so favorable that last summer ten tents were purchased and 52 children were taken down during the summer to Coney Island to be given the opportunity to live along the seashore. One of the most important elements of the daily régime at the seashore is the amount of occupation the children secure while playing in the sand. This keeps them out of door most of the day and before long all of the children in spite of bandages and splints were in total forgetfulness of themselves playing in the sand. Besides this all of them bathed in the salt water every day. Some of the children had open sinuses. One of them had a sinus of the antrum that had been open for several years, but not only did the salt water get at these sinuses, but occasionally sand got into them. Notwithstanding these supposed irritants, in fact it might almost be said, because of them, the sinuses healed not to reopen later.

Winter Retention.—The experience in France seems to show that at least three years is required for the cure of a case of surgical tuberculosis. Accordingly it was resolved to keep these children during the winter down on Coney Island and they occupied one of the buildings at Seabreeze. The colder weather far from stopping the benefit to the children, has apparently added to the zest of their outdoor pleasures. Not even a snowstorm keeps them inside. It was snowing hard on Christmas Day, yet all of them gathered round the bonfire. Occasionally from the open windows snow drifts in over the coverlets of the beds, but the children sleep soundly in spite of it. There are none of the starting pains so common among tuberculous children. The French custom is to close the windows at night, because the French have a dread of the night air. This seems to be a mistake, however, for the children sleep better at Seabreeze with the windows open. Few operations are needed and when these are performed, the progress then is rapid. In general it may be said that the progress during the cold weather is even better than in warm weather. This of course is true also for pulmonary tuberculosis, with regard to which indeed it is said, that a patient does very well if he holds his own in the summer time, while for hopeful results there must be distinct gain in the winter time.

Situation at Coney Island.—The present situation at Coney Island is in many ways ideal. The shore of the island faces the south and so gets the benefit of the mildest breezes, while in France the seacoast on which the children's hospitals are situated faces the north. There is, too, more sunshine at Coney Island than on the northern coast of France. Reasonable care is taken that the children do not suffer from the cold at times while dressing and undressing. The steam heat necessary for this is put on shortly before it is needed and then can be shut off. At Seabreeze the good fortune has been to have a superintendent, a nurse who has seen the treatment of pulmonary tuberculosis at Trudeau in the Adirondacks during the winter. This insures the children having the free access of air which constitutes so important a part of the successful treatment of any form of tuberculosis. It might be thought that the cold would be depressing to the circulation of these weakened children. On the contrary, their hands are warm as toast and at times, while the visiting physician making his rounds and unaccustomed to the cold, is apt to shiver from it, they are rosy and cheerful and not only have no complaints, but laugh at his cold hands and want to show him how nice and warm are their own.

Outdoor Air in Surgical Tuberculosis. Dr. Virgil P. Gibney said that undoubtedly the opportunities for outdoor air provided that a place like that near Seabreeze, is almost ideal for children suffering from tuberculosis. Dr. Gibney has realized this even from the unfavorable circumstances to which the children are sometimes sent home from hospitals, yet do better than they did under the most careful hospital treatment. Not long since in looking up the statistics of tuberculosis of the ankle, in which cases of fistulæ are prone to be especially obstinate to treatment, it is found that children sent home to rear tenements where the unfavorable conditions would seem to be sure to exaggerate their ill health, have been found after a couple of years to be cured. Not infrequently it was found that these children spent most of their time in the yards while at home and thus secured what was absolutely the best tonic for them. The more one sees of surgical tuberculosis under hospital treatment, the more one realizes the necessity for getting the little patients out of the hospital air into other surroundings.

Not so much Orthopedics as Nutrition.—Dr. Taylor said that this question of surgical tuberculosis in children and fresh air was timely. At the present moment it is realized very generally that orthopedics does not do much for children suffering from tuberculosis and that nutrition is much better than splints and operations. Whenever hospital patients have been sent out to summer homes, they always return better with their sinuses either completely healed or so much reduced in size as to be very little drain on the sufferer's health. Five new homes for children suffering from tuberculosis are to be opened this summer and this is part of the larger movement to get all sorts of dependents as well as epileptics and the tuberculous out into the country. Undoubtedly the change of air is the most important feature. As to whether the sea or the inland air is the better, remains a question, but there is no doubt that for children the opportunities for play afforded near the seashore make the best possible tonic and keep the little ones from having time hang heavy on their hands. If the children only play, mechanical treatment may well be disregarded, and it has been noted over and over again that even though they hobble around on their apparatus in such a way as seemingly to undo its good purpose, yet excellent results have obtained.

Illustrative Cases.—Dr. Wallis said that some of the results obtained are surprising. In one case the sinuses leading from the ankle seemed to be such a drain upon the patient's health and seemed to be so absolutely intractable, that amputation was advised. In spite of this after six months of country air, the sinuses are better and reasonably good movement has been secured in the ankle-joint. Very little immobilization is needed under the condition of better nutrition that soon

begins to develop, whereas the result of chronic suppuration, amyloid disease has developed, the patients do not get better. When there are infected glands present, the improvement seems to be only temporary and it would appear advisable to remove such glands. So far of course the experience has been obtained only with regard to the worst class of cases, indeed some of them looked hopeless when they were transferred to the country. Notwithstanding this, the average gain per week per child has been a fifth of a pound. There is no doubt that if beginning cases are selected, even better results will be obtained.

Dr. Whitman said that the experience at the hospitals is that children having opportunities for a summer at the seashore come back in much better condition than those who pass their summer elsewhere.

Dr. Frank Daniels said that the universal experience is now that chronic patients must be made to get out of doors as much as possible.

Dr. Charles Schram said that undoubtedly the greater frequency among children of infection of glands and of bones pointed to the origin of their tuberculosis from food. The avenue of entrance for the bacilli is undoubtedly through the digestive tract. Not infrequently it happens that bacilli lie dormant, especially in the lungs for many years, until some running down of the patient's general health in later life gives the opportunity for the bacilli to invade other tissues. If these cases can be successfully treated by means of outdoor air at the seaside, it will constitute an ideal prophylaxis against the outbreak of disease later in life and will help to lessen the mortality not only directly but indirectly from tuberculosis, because there will be fewer foci of the disease.

JOINT MEETING OF THE CHICAGO UROLOGICAL AND CHICAGO MEDICAL SOCIETIES.

Meeting, held March 1, 1905.

President of the Chicago Urological Society, R. R. Campbell, M.D., in the Chair.

Pus Infections of the Genital Tract in the Male.—Dr. William T. Belfield read a paper on this subject, in which he stated that pus infections of the genital tract in the male are induced by the gonococcus and by the common pyogenic bacteria. To the latter the healthy urethra is immune, since they are found as constantly in the average urethra as in the average mouth; they invade the urethral tissues when the vitality of the latter is reduced, by stricture formation or by senility. Pus infections of the senile prostate are common, even before urethral instruments have been introduced; they are commonly mistaken for prostatic hypertrophy, because the subjects are elderly; and they have furnished brilliant cures to the Bottini operation, castration and prostatectomy, though curable without operation by massage and silver nitrate injections. The penile urethra is a watershed whose summit is near its middle; the bulbous urethra is therefore a catch-basin for pus during a gonorrhea, and should be washed out by injections; otherwise it becomes the site of stubborn strictures. The lacunæ, ten to twenty in number (the posterior ones opening toward the bladder), the utricle and the prostatic follicles, are inaccessible to both urethral and internal medication; they therefore harbor the infection after the general surface is cured, and may reinfect the latter. As the embryonic cloaca furnishes both trigonum and deep urethra, a pus infection which reaches the prostate, as gonorrhea usually does, is apt to invade the trigonum also; but it stops there, the rest of the bladder being seldom invaded, as the cystoscope shows. "Gonorrhea cystitis," is a misnomer for an infection limited to the deep urethra and trigonum.

Pus Tubes in the Male.—The genital duct proper—seminal vesicle, vas deferens, and epididymis—reacts to the pyogenic bacteria just as does the urethra, that is, by suppuration. This fact has been hitherto overlooked, and gonorrheal epididymitis is even to-day treated as a medical rather than as a surgical disease, probably because fluctuation in the epididymis is so seldom recognized. The author's investigations have shown that the pus infections of the male genital duct are quite analogous to those of the Fallopian tubes; that pus tubes are quite as common in the male as they are known to be in the female; and that acute epididymitis, gonorrheal or otherwise, should be treated as a suppurative process, by incision and drainage. While this may be omitted in the mild cases, it should be practised in the severe grades, especially when acute hydrocele and scrotal edema appear, for these are infallible signs of suppuration. In chronic epididymitis, also, especially when a painful and tender swelling persists in the epididymitis, incision or excision of the pus focus may be required.

Direct Medication of the Vas and Vesicle.—The author has practised a therapeutic measure which seems to be novel, namely, the injection of the entire vas deferens and the seminal vesicle through a needle introduced into the vas, just above the epididymis. The therapeutic value of this measure is yet to be determined; at present it is merely asserted that the mucous lining of the vas and seminal vesicle can be mediated in this way. The pelvic organs of a cadaver were shown, in which this injection had been practised *in situ* with Prussian blue; the injected vas and vesicle were seen to be distended and bluish in color.

X-rays as a Means of Diagnosis in Kidney Surgery.—Dr. Arthur Dean Bevan called attention to the fact that the first work that was done in this country in this line was done in Chicago; that very early after the discovery of the X-ray by Roentgen Dr. Otto Schmidt developed a complete laboratory for X-ray purposes in this city. He was assisted by Mr. Fuchs, and very early in the work Dr. Bevan had the opportunity of submitting a medical student to the X-ray and obtained a very good plate. It was a case in which he had already removed a stone from one kidney, and later symptoms had developed suggesting stone in the other. He took an X-ray picture and found on the suspected side very definite evidence of stone. At about the same time, Dr. L. L. McArthur had a case which was successful in the sense that the X-ray picture showed a shadow which later proved to be a mass of concretions or gravel, and not a single definite stone. These two cases were the first reported in this country, and before any of this work had been done on the continent. This work was done in Chicago in 1897. Some British and Scottish surgeons had a little before this reported some successful work. Even as late as a year ago one of the most prominent surgeons in this country was in the laboratory at the Presbyterian Hospital and with a wave of his hand said, "I have no confidence in the use of the X-ray as a means of diagnosis in kidney work; I have been fooled by it, and I regard it as an unreliable piece of evidence." However, since that time very definite results have been obtained by the use of the X-ray. Leonard, of Philadelphia, picked up the work, which was begun in Chicago, and developed it to a point where he showed pretty conclusively that the evidence furnished by the X-ray was to be relied on, and even went so far as to make the claim which at that time was very

generally ridiculed that the negative evidence, where the differentiation was clear, was also to be relied upon. A little later, after Leonard's paper, Dr. Bevan published a paper in the *Annals of Surgery* reporting 13 or 14 cases, and made the same claim that the X-ray as a means of diagnosis was to be relied upon to a greater extent than any other means we had at our disposal in cases of kidney stone. He went so far as to make the claim that the X-ray picture, showing good differentiation, was to be relied upon very often more than an exploratory incision, because he had early in the work removed a number of kidney stones in cases in which other surgeons had made exploratory incisions and had failed to find stones. He thinks the best exposition of this entire work is to be found in a comparatively recent number of the *Beiträge für Chirurgie*, from the pens of Kümmel and Rumpell. Kümmell takes the position of Leonard and the speaker, and presents practically these conclusions, that the X-ray, properly used, will detect a stone in any individual, no matter how thick, and a stone of any chemical composition; that the detection of the stone does not depend so much upon the chemical composition or thickness of the individual as it does upon the proper use of the X-ray. Kümmel says there were 18 cases of positive examinations showing stone in the plate; the patients were operated upon and the stones found at the time of operation, and in two additional cases he found a stone post mortem. In a similar number of cases where no stone was found, but where a stone was suspected, other lesions, such as hydronephrosis, pyonephrosis, hypernephroma, tuberculosis, etc., were found. The conclusions of Kümmel, Leonard and himself are not accepted to-day, and he wanted to point out why. Most of the work done with the X-ray in kidney stone has been poor work. He has seen a lot of work done at hospitals and in laboratories and submitted to medical men as finished, expert X-ray work, which was not really worthy of attention, which showed no differentiation. He had seen plates taken by men who were not competent to interpret the findings and determine whether or not stone was present; then operate upon the case, find no stone at the time of operation and damn the X-ray. The X-ray does not lie in these cases. The X-ray has absolutely no fallacies. To be sure, there will be a given group of cases where the evidence is uncertain, where the individual, who is doing this work, who is competent to do it and to interpret the work will distinctly place them in an uncertain group. On the other hand, the great majority of cases will be very clear and definite, and will belong distinctly to a group where there is stone or where there is no stone present, and where the differentiation is so clear and definite. We have no means at our disposal to-day which gives us the evidence that the X-ray does in kidney stone. The work which he has been able to do in this line is about the same as that reported by Kümmel in the *Beiträge* comprising about 40 cases. In a discussion of this subject last year, Dr. Joseph F. Smith reported 26 or 27 cases of his (Bevan's) work, which he had handled, and the results up to that time were the following: In 13 cases positive findings and stones found at operation; in about the same number of cases, negative findings, and at the same time of operation other pathological conditions than stone found. There was one doubtful case which was clearly stone clinically, which was found at the time of the operation. After the operation one could clearly see in the plates a stone behind the twelfth rib, in a position where it is not often found. The ordinary position of stone in these cases is 1½ inches from the transverse process and a little below the twelfth rib. With reference to the differential diagnosis between stone and other lesions of the kidney, and between stone and other conditions, such as appendicitis, gall-stones, and some other complicating conditions on the right side, in a series of several hundred cases collected since the introduction of the X-ray and the use of it in kidney stone work, he has had three cases in which a diagnosis of appendicitis was made, where the evidence seemed to be definite, the appendix was removed, and where later the X-ray disclosed a stone in the kidney. It is difficult to say definitely whether the symptoms which occurred in these cases were at all times due to the stone, and the appendix was not the organ at fault. In two of these cases he believes the appendix had not given rise to any symptom. The history in all three was quite similar. A series of attacks, the appendix removed, and later attacks after the operation. Then, another review of the situation, with the X-ray picture determining the presence of stone, the stone removed, and patient cured. One rather interesting feature in one of these cases was found: After the removal of the appendix first and the stone later, the patient was not cured, and a further review of the case showed tubercle bacilli in the urine. One kidney was found normal, and in the other nephrectomy resulted in a permanent cure. In the differential diagnosis the gall-stones should be considered. He has had this experience: The wife of a physician, with repeated attacks of pain upon the right side, suggesting attacks of appendicitis, of gall-stones, or of kidney lesion. A large kidney upon that side fairly movable, an X-ray picture showing in the usual position a kidney stone very definitely. Fortunately for the patient, her husband, who was a physician and very acute observer, was satisfied that whenever she had an attack there was a distinct small tumor in the region of the gall-bladder. At the time he made the examination he thought she had a kidney stone, and that the stone in the shadow was in the kidney. On the evidence submitted by her husband he operated over the gall-bladder and found a single stone in the contracted gall-bladder. This stone contained a great deal of carbonate of calcium, throwing a shadow as distinct as any kidney stone he had ever seen. In one other case, in a rather thin individual, not emaciated, he found another shadow in exactly the position of a stone in the pelvis of the kidney. The evidence was in favor of gall-stone attacks. The picture was one not accompanied with jaundice except a very slight attack. However, there was such a typical picture, chills and fever, and pain referred to the region of the bile tract, with the absence of distinct kidney symptoms, that a diagnosis of stone in the common duct was made, and later it developed there was a single stone in the common duct. He called attention to the fact that these stones very seldom show in the X-ray. He has learned from this experience, especially in connection with the appendix, to take the X-ray picture of the case submitted to him as a case of appendix trouble to exclude the possibility of kidney stone. Dr. Bevan showed numerous skiagraphs illustrating the points brought out by him in his previous remarks.

The Diagnosis of Ureteral Stones.—Dr. M. L. Harris stated that with the possible rare exception of a stone forming about a foreign body or an obstruction in the ureter, all ureteral stones have their origin in the kidneys, whence they migrate to some point in the ureter where they become arrested. Previous to the migration of a stone, the patient may or may not have presented symptoms pointing to kidney trouble, but the act of migrating is almost always accompanied by excruciating pain, known as renal or ureteral colic. The pain does not usually cease suddenly, as when the stone drops

into the bladder, followed shortly by its escape from the urethra, but disappears more gradually. The history of such an attack of pain is therefore the first symptom of importance in the diagnosis of ureteral stone. After the stone becomes lodged it may remain latent for an indefinite period, provided it does not completely occlude the lumen of the ureter so as to prevent the passage of the urine around it. More commonly the patient has recurring attacks of pain of varying intensity, and at variable intervals similar to the original ureteral colic, or a more or less fixed pain or soreness at some point in the lumbar region or along the course of the ureter may persist. The urinary findings and other symptoms are such as are common to kidney stones, or a pyelitis, or ureteritis from other causes, and therefore in no way characteristic. Localized tenderness along the ureter, or an enlarged ureter, if detached, on palpation may have some significance, but are not conclusive. Stones lodged at the lower end of the ureter may be palpated at times through the vagina or more rarely through the rectum. With the exception of these latter cases, a diagnosis of ureteral stone based on the symptomatology can never be more than presumptive, and previous to the advent of the Roentgen ray and of the ureteral catheter a diagnosis of a ureteral stone in any portion of the ureter, except the lower end, is almost never made except at an operation. With the aid of the X-ray stones were soon recognized in all portions of the ureter and when a distinct, well-defined shadow was obtained in the course of this duct, a diagnosis of stone was considered positive. The great value of the X-ray was well shown in one of the cases reported by the author. In this case the X-ray not only aided materially in the diagnosis, but by accurately localizing the stone facilitated its removal. It should be remembered, however, that a skiagram is but a visible expression of the relative facility with which the X-rays are transmitted through the various substances which have been interposed. A shadow in the picture does not in any way define what the cause of that shadow was, but this must be determined entirely from collateral facts. A correct interpretation of the shadows was very important, yet this may be difficult or even impossible without a knowledge of all of the collateral facts pertaining to the particular case in hand. Dr. Harris directed attention to the possibility of error in interpreting shadows which apparently lie in the course of the ureter, and particularly that portion of the ureter which is contained within the pelvis. He has had two interesting cases recently in which an error of interpretation of the significance of distinct shadows of this portion of the pelvis was made. These two cases were cited in detail, and showed how easy it is to make an error in diagnosis by depending on the X-ray alone in supposed ureteral stones. What the cause of these shadows was still remains a mystery. Whether they were due to phleboliths or to small sesamoids or spots of calcification in some of the muscles of the pelvis he is unable to say, but that they were not due to ureteral stones is certain, and that such shadows cannot by their appearance alone be distinguished from ureteral stones is equally true. These cases also teach us how such errors may be avoided in the future. When such shadows are found in this portion of the pelvis, with symptoms pointing to ureteral stone, the ureters should be catheterized in order to determine whether the shadow actually lies in the course of the ureter, and whether the catheter meets an obstruction at the point indicated. The tip of the bougie may be waxed, so that contact with a foreign body, such as a stone, may be recognized by the indentations made in the wax. It is not his intention to depreciate the value of the X-ray in this work, but to call attention to the fact that there may be other bodies in the pelvis capable of casting shadows which, from appearances alone, cannot be distinguished from shadows cast by ureteral stones, and that in some of these cases a correct diagnosis can be made only by the use of the ureteral bougie.

An Attempt to Use the Electric Conductivity of Urine for Clinical Purposes.—Drs. Gustav Kolischer and Louis E. Schmidt read a joint paper with this title. After referring to the methods of Richter, Caspar, Kümmel, Turner, and Löwenhardt in determining the functional capacity of the kidney, the authors stated that they had tried to determine the functional capacity of the kidneys from a new point of view. They tried to make every kidney a standard unto itself. They started from the idea that the vitality and normal and abnormal status of any tissue can best be tested by observing its reactions to certain interferences brought to bear upon it. Starting from the experience that certain stains brought into the circulation would appear at different times and with different intensity in the urine, they investigated whether or not the secreting efficiency of normal and abnormal kidneys might be influenced in a way peculiar and characteristic of normal and abnormal conditions of the secreting tissue. If that be the case the osmotic concentration of the urine voided before and after staining certainly ought to show marked differences. The results of their investigations so far seem to bear out these theoretical speculations. As the most sensitive test they resorted to the test of electric conductivity and as a method of staining they selected hypodermic injections of indigo carmine. Urine drawn at the same time separately from either normal kidney in an individual, otherwise perfectly healthy, might show different electric conductivity. After the stain is brought into the circulation, and after the urine becomes colored, the urine of normal kidneys always shows a slight decrease of electric conductivity which resistance will never exceed nine international ohms. In case urine simultaneously drawn from both normal kidneys shows different electric conductivity before staining, the decrease of conductivity appearing after staining is exactly the same in either specimen. Urine drawn from pathological kidneys will always after staining show a decided increase of electric conductivity. So far, the authors believe they are justified in saying that any increase after staining of electric conductivity beyond 10 international ohms is characteristic of impaired health of the kidney. If this increase stays inside the limits of 20 ohms, this kidney may be considered safe in a surgical sense, that is, it can reasonably be expected to be of sufficient functional capacity to attend to the eliminating process after its mate has been removed. Any kidney whose urine after staining shows an increase of electric conductivity beyond 20 ohms, has to be considered as absolutely unsafe in a surgical sense. If the method of the authors should prove to be reliable, they have succeeded in determining the fact that there are cases of one-sided nephritis. Judging from their experiments, there seems to be a fair prospect they will be able to determine by this method in advance whether a given individual will react as to his kidneys favorably or unfavorably to the administration of a general anesthetic. Dr. B. C. Corbus demonstrated an apparatus for testing the electric conductivity of urine.

BOOKS RECEIVED.

A Text-book of Legal Medicine. By Dr. F. W. Draper. 8vo, 573 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.